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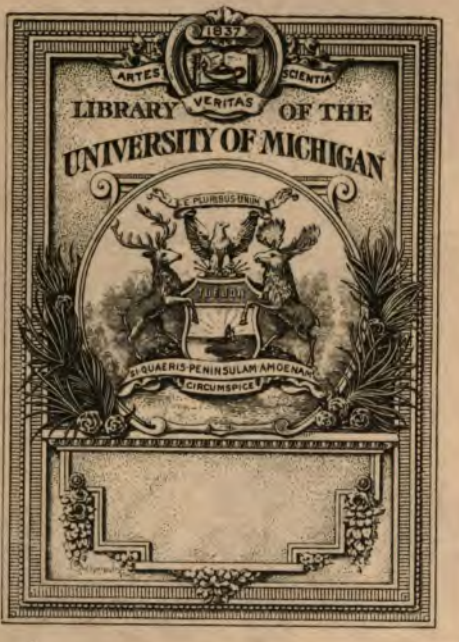
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CASE

OF

AXILLARY ANEURISM

SUCCESSFULLY TREATED

BY TYING THE

SUBCLAVIAN ARTERY.

By CHARLES ASTON KEY, Esq.

SURGEON TO GUY'S HOSPITAL.

Read Nov. 11th, 1823.

GEORGE VAUGHAN, æt. 36, whose occupation is that of an extra-tide waiter at the Custom House, in the month of July last, while making a sudden exertion with his right arm, felt (as he expressed it) something snap below the collar bone, attended with a slight degree of pain. In a day or two afterwards, he perceived a small tumor on the fore part of the chest, about an inch and a half below the clavicle, which pulsated strongly. It continued to increase in size, but was not attended with much pain or inconvenience, nor was he induced to refrain from his usual occupation.

On the 29th of August, he presented himself at Guy's Hospital as an out patient, and I detained him for the opinion of Sir Astley Cooper. The

aneurism was large, forming a regular circumscribed swelling from the edge of the clavicle to the lower edge of the pectoral muscle; the pulsation was strong, and could be felt distinctly in all parts of the sac; his arm was not painful nor swelled, but he complained of slight numbness in his fingers. His health was unimpaired, and he appeared in all respects in a condition to benefit by an operation. It should likewise be mentioned, that pressure on the subclavian artery not only commanded the pulsation in the aneurismal sac, but so effectually prevented the blood entering the sac, as to empty it almost entirely of its fluid contents. The nature of his complaint was explained to him; and he left the hospital with injunctions, to keep his arm quiet, to live temperately, and, if possible, to relax in his attendance on his usual employment.

He called on me once or twice with the aneurism and the limb precisely in the same state. As I was about to leave town for a few days, I did not propose the operation to him immediately; but cautioned him against using, or allowing to be used, any means that the officious ignorance of friends might suggest.

In a day or two after my return, he again called on me; and surprised me by the visible alteration in his appearance. His countenance was pallid, and covered with a cold perspiration,

and indicated great distress; his arm and hand were extremely œdematous; the subcutaneous veins of his arm, shoulder, and side of the neck, were distended with blood, and formed a varicose plexus, evincing the degree of pressure, under which the axillary vessels were labouring. The aneurismal tumor had lost its pulsation, and could not be felt to vibrate from the ingress of the blood; it had increased considerably in size, extending lower down into the axilla, and forming a more prominent tumor under the pectoralis major. The pain he experienced, was unceasing, depriving him of rest, and producing a high degree of constitutional irritation; his pulse above a hundred in a minute, and sharp; his tongue white and glassy. The pain was most intense along the inner side of his arm, extending from the back part of the axilla to his elbow. He then explained the cause of this change; during my absence, in consequence of some uneasy sensations he began to experience in the shoulder, he was recommended by a surgeon to try the effects of pressure in reducing the tumor; for this purpose a piece of cork was bound over the artery above the clavicle, and bandages with pads were applied tightly about the tumor: the axillary vessels and plexus of nerves unable to bear this pressure, resented such treatment by producing the ill effects above mentioned.

After I had explained to him the nature, and

the urgency of his symptoms, and that the only means of alleviating his sufferings consisted in the operation of securing the artery by ligature, he expressed his willingness to come into the hospital, and to submit to any operation that could hold out a chance of relief. On Thursday, September 19th he was admitted into the hospital; and Mr. Travers coinciding in the opinion, that the operation of tying the subclavian artery afforded the probability of being attended with success, one o'clock on the following day was appointed for its performance.

The patient being brought into the operating theatre, the extent of the sac in the neighbourhood of the subclavian artery was ascertained, to guard, if possible, against the danger of opening it during the operation of passing the ligature under the vessel; it appeared to be bounded above by the subclavian muscle, and the artery above the clavicle appeared (as far as the finger could ascertain) to be healthy. The clavicle was raised to its utmost, and was curved considerably backward towards the trapezius muscle; it could not be raised higher by pressure made upwards against the elbow. The patient being laid upon an inclined plane, so that the light from a large skylight might be thrown into the triangular space in which the artery lies imbedded, I began the external incision in the following manner. Standing by the patient's right side, I drew the integuments

down over the clavicle with my left hand, and cut freely upon the bone, beginning about half an inch over the clavicular portion of the sterno-mastoid, and continuing the incision outwards for three inches. The integuments being relaxed, the incision became raised about the third of an inch, above the clavicle, and exposed a strong platysma myoides, which was divided to the same extent. Numerous turgid veins were now exposed lying upon the cervical fascia; to avoid them was impossible; they were therefore divided, and about three ounces of blood were quickly lost; one larger than the rest was secured by Mr. Travers to prevent any obstruction from hemorrhage in the after-steps of the operation. The dense outer layer of the cervical fascia was then more freely divided, and the loose cellular texture enveloping the glands of the neck being detached by the finger, the omo-hyoideus was laid bare. A little farther dissection with the end of a director exposed the artery to the finger, pulsating over the rib; but the depth of the angle, in which it was inclosed, rendering it impossible to pass a ligature under it, about three quarters of an inch of the clavicular portion of the sterno-mastoid was divided, which afforded sufficient room, and rendered the concluding part of the operation easy; the artery became readily exposed to view, and an armed aneurismal needle was passed with facility under it. A single ligature of silk was tightened around the vessel, and the edges of the

wound brought into contact with two sutures and adhesive plaster. The patient had been so little exhausted by the operation, which lasted twenty minutes, that he expressed a wish to walk down stairs to his bed, which of course was not consented to.

The absence of any very untoward symptoms renders it unnecessary to trouble the Society with a detail of the conclusion of the case. It will be sufficient to mention, that eight and forty hours after the operation, a general excitement of the system with an acceleration of pulse induced Mr. Travers to prescribe (during my absence from town) a purgative of scammony and calomel, which not only removed the symptoms of general fever, but also a retention of urine, arising from a slight stricture, under which he had previously laboured. His urine had been twice drawn off by the introduction of the catheter. A trivial irritation of the trachea, inducing an occasional cough with expectoration, was allayed by the opiate linctus of the hospital. Opiates in other forms were not found necessary, with the exceptions of two nights on which his rest had been broken, when gtt. xxv tinct. opii were given him. The œdema of the limb subsided quickly after the ligature was applied to the vessel; its natural warmth was maintained, perhaps aided by being enveloped in a double fold of thin flannel; and the pain of which he complained prior to the

operation, altogether left him as soon as he returned to his bed. The local treatment consisted in the application of a light poultice to the wound, after the removal, on the fourth day, of the adhesive straps and sutures, and in the prevention of sinuses from the lodgment of purulent matter.

The ligature was found lying detached in the wound, on Wednesday morning October 1st, the twelfth day after its application, and was removed without hemorrhage. The wound was nearly cicatrized, with the exception of the aperture occasioned by the ligature, which is gradually closing. On the following day he was allowed to leave his bed, and walk about the ward, to relieve the fatigue occasioned by the uniform position he had scrupulously maintained, till the ligature came away. The tumor is gradually subsiding, gives him no uneasiness, and promises to be absorbed without inflammation or suppuration. The pulse at the wrist cannot yet be felt.

It remains for me to acknowledge the kind assistance afforded me by Mr. Travers, not only during the operation, but also in the after treatment of the case, together with the interest he manifested in its progress. The wound was attended with the greatest care by Mr. Herbert of Farringdon, Berks, at that time a dresser to Sir Astley Cooper, to whose assiduity the patient is indebted for its speedy cicatrization.

The fatality hitherto attending the operation in the practice of this town, has induced me to lay this case before the Society, as a proof, in addition to cases published by surgeons of other countries, that we may expect as much success to attend the ligature upon the subclavian artery, as upon the other large arteries of the body. Past experience may perhaps not appear to warrant this expectation; but in estimating the probability of success, we are to regard not so much the number of fatal cases, as the causes of this fatal termination; and whether they are adventitious or essential to the operation of the ligature on this vessel. The only circumstance, that ought to deter a surgeon from putting a ligature around any artery in the human body (I will not except the aorta) is, the uniform cessation of circulation in the parts below the ligature. That this is a rare occurrence after the subclavian operation, surgical records will prove; within my own experience, the operation has been performed three times without the least tendency to that state. The cause of death must therefore be sought for in circumstances not necessarily connected with the operation, and which may consequently be avoided. The most common causes of death, I believe, will be found to be, suppuration in the anterior mediastinum, in consequence of the violence done to the parts during the operation; and inflammation of the pleura, with consequent effusion into the cavity of the thorax. The former may be attributed

solely to the injudicious disturbing of the reticular membrane connecting the artery with the scalenus anticus and with the pleura. This reticular texture will be found to be continuous with a similar texture in the anterior mediastinum, and inflammation set up in the former quickly spreads through the latter, in consequence of the free communication of the cells. In performing the operation the surgeon may altogether avoid this danger, by confining the point of his director or aneurismal needle to that part of the artery which lies upon the rib; the pulsation is here more readily felt, the situation of the vessel more easily ascertained, and the artery is more accessible to the ligature, than where it is emerging from behind the scalenus muscle. Inflammation of the pleura is to be apprehended, more from the advanced state of the disease prior to the operation, than from injury done during its performance. The extent of the sac, which quickly attains a great size in consequence of the loose texture of the cellular membrane under the pectoral muscle, causes great local irritation by its pressure on the axillary nerves, and the effect of irritation upon a nerve in producing inflammation in the part to which it is distributed, is happily illustrated by Mr. Brodie's experiment on the par vagum. By its pressure on the neighbouring veins, the sac also induces a general œdematous effusion, in which the pleura often partakes; and from the peculiar termination of the bronchial veins on the left side of the body, serous effusion from the pleura

pulmonalis, when the disease exists on that side, may be regarded as a probable occurrence. In a patient, on whom I performed the operation in the winter of 1822, and who lived till the seventh day, the appearances I have alluded to were present, and the pericardium was highly inflamed and lined with a coat of adhesive matter.

I shall conclude this paper by adverting to two circumstances, which greatly facilitate the operation; one, is the division of part of the clavicular portion of the sterno-mastoid muscle, to which I should not again have alluded, had it not been expressly condemned by some of our best writers. The other circumstance which is equally important, is the mode of conducting the needle under the artery, and of raising the end of the ligature from the eye of the needle to the surface of the wound. I believe this to have constituted the principal difficulty in every operation on this artery since Mr. Ramsden's case at St. Bartholomew's hospital. I have therefore subjoined a drawing of the needle and ligature I employed on this occasion, and I believe that it will be found useful in all cases, in which, from the depth of the vessel, the extremity of the needle necessarily eludes the eye of the operator.

The needle* consists of a piece of iron fixed in a

* The needle is one used by Sir Astley Cooper, but with the curve altered.

flat ivory handle, and the curve that I have found most manageable in operating upon the larger arteries is represented. After passing the silk through the eye of the needle, a common loop and knot are made at *a*; the ends of the ligature being drawn tight so as to bring the knot close to the eye of the needle, a second knot is made at *b*; by pulling the second knot, the knot *a* can be kept close to the eye of the instrument. The operator, having passed the needle under the artery, feels for the extremity of the instrument and the knot drawn close to its eye; by gently moving the knot, the loop becomes disengaged, and can be drawn to the surface of the wound. Both knots being cut off, the operator can use one or two ligatures, as he may deem expedient.

Since the communication of this case to the Society, the patient has been gradually gaining the use of his arm, which is now nearly as perfect as that of the other limb; the tumor has disappeared, with the exception of a hardness which usually remains after the absorption of an aneurismal tumor. The pulse at the wrist I have not been able to discover, though others, who have examined the limb, have felt something like a thrill in the situation of the radial artery.

May, 1824.

CASE

OF

TUMOR

IN THE

ANTERIOR MEDIASTINUM,

CONTAINING

BONE AND TEETH.

By JAMES ALEXANDER GORDON, M.D.

PHYSICIAN TO THE ISLINGTON DISPENSARY.

Read Nov. 25th, 1823.

MARY COOPER, aged 21, a very stout young woman, was admitted a patient of the Islington Dispensary on the 17th of June, 1822, labouring under the usual symptoms of pneumonia. These were in part subdued by copious and repeated blood-letting, but there still remained an irritating cough, and a pulse of 120 which resisted all the usual remedies. The pain of the side occasionally recurred, and was always relieved by blood-letting, but the cough never varied; it was convulsive and suffocating, and was attended with an expectoration, which was at first mucous, and afterwards purulent. The health of the patient had been previously good,

and it is worthy of remark, that even at this period of the disease, there was no emaciation.

On the 19th of August she pointed out to Dr. John Sims, who was attending for me, a small round tumor, below the sternal extremity of the left clavicle, about the size of a nut, pulsating regularly and strongly. From its appearance and situation, it was pronounced at the consultation which took place on the case, to be an aneurism of the aorta, or of the arteria innominata. The patient was freely bled, put upon spare diet, and the occasional symptoms of irritation relieved by appropriate remedies. In the course of three weeks, the tumor, which rapidly increased, rose above the clavicle, and then somewhat receded. The breathing was always oppressed, though she could inspire without pain or cough; the pulse was uniformly 120, and the attempt to lie down always excited cough. On the 7th of November she was removed to St. Bartholomew's Hospital, where she remained till the 9th of December, and was then dismissed for irregularity, and came again to the Dispensary.

The tumor remained for some time stationary. She was regularly bled about once a week, and her health gradually improved, but in the spring of 1823, the tumor which had for the last four months occupied the same spot, over the sternum, above and between the centre and angle, gradu-

ally extended over the trachea, occasioning great irritation and threatening suffocation. In the middle of June it began to point on the right side of the sternum, the skin got gradually thinner, and at each pulsation it appeared ready to burst, which it did on the 25th, but nothing but serous fluid flowed. On examining with the probe I found that this was a small superficial sac, occasioned, I presumed, by the pressure of the aneurismal tumor, which at each pulsation pushed the probe out of the sac. No discharge took place after the 1st of August, from which time the tumor gradually receded, and on the 12th of September there was no trace of it. The patient left the Dispensary in better health than she had enjoyed for two years, and went to work.

She again applied on the 17th of October, with symptoms of general fever, and oppressed breathing, but without any local complaint, and she died on the 20th. The body was opened in my presence, on the 22d, by Mr. Kingdon, one of the surgeons of the institution, the permission to effect which was obtained with great difficulty, and only then under promise of confining the examination to the chest, the fulfilment of which condition was secured by the presence of the father. The following are Mr. K.'s notes of the dissection.

"There was a tumor in the anterior medias-

tinum, closely attached to the upper two thirds of the sternum, and the sternal extremity of the right clavicle. The left side of the chest contained a considerable quantity of fluid, and the lung was adherent to all such part of the costal pleura not so occupied. The right lung was adherent on its whole surface, and not capable of being detached at any part; its interior was loaded with fluid, and offered the appearance of œdematous cellular tissue, resembling lung only in its colour. The heart was flaccid, but its interior arrangement apparently healthy. The aorta and vessels given off at its arch were healthy, but the arteria innominata was completely enveloped by the thickened cellular tissue which connected the tumor with the surrounding parts. The parietes of the tumor participated in the character of that with which it was in immediate connexion; thus its anterior, from which the sternum was with difficulty raised, had the close compactness of tendinous expansion; and its posterior and lateral portions were more loose and flaccid. The contents were, serous fluid, sebaceous matter, mixed with hair, the latter not in large quantity nor in distinct locks, and an apparently fatty mass at the bottom, which being cut open proved bony, and on more careful examination, a bone was detected very nearly resembling the upper maxillary, a portion of alveolar process which might seem to belong to the upper or lower maxillary, and seven teeth, two cuspidati, two in-

cisores, and three molares. One of the cuspidati has its crown perfectly covered with enamel and freed from its capsule; the other is covered with the capsule, but is removed from its socket without any connexion. The molares are in their sockets imperfectly formed, while the incisores are by means of their capsules attached to what at first appeared fat, but which on closer examination seems to possess the character of palatine membrane."

Besides Mr. Highmore's case, published in 1815, and those alluded to in that publication, there are many on record in the Philosophical Transactions*, which may be fairly classed with the one just related, since I should consider the tumor had co-existence with the subject from which it was taken, and was carried without inconvenience, till inflammation in its neighbourhood excited that fluid secretion upon which its enlargement and consequent inconvenience depended.

The preparation is in the possession of Mr. Stanley.

* Case of a male grey-hound passing per anum a mass resembling a whelp.—Vol. XIX. p. 316.

Account of a child born with a tumor near the anus, containing some rudiments of an embryo.—Vol. XLV. p. 325.

A CASE

OF

INJURY TO THE BLOOD VESSELS

OF THE

LOWER EXTREMITY,

PRODUCING

PALE DRY GANGRENE IN THE FOOT.

By THOMAS WILLIAM CHEVALIER, Esq.

Read Jan. 27th, 1824.

I AM induced to hope that the following account may not be unacceptable to the members of the Medical and Chirurgical Society, as there is not to be obtained from their transactions, hitherto, any direct information upon the subject of Dry Gangrene, and as this disease, and especially its pale variety, is of so rare occurrence as to be comparatively unknown, by personal observation, to many medical practitioners in this country.

On Friday night, September 5th, 1823, Mr. T. M., aged 32 years, received a blow in his left groin, from the shaft of a van, against which he rode with great violence. At the time of the accident he is stated to have lost about a pound and a half of dark coloured blood, and to have

been taken up senseless. In about half an hour I found him sensible, but exceedingly pale and restless, and complaining of great pain in his leg and foot. His pulse 120, and feeble. The external wound was about three inches long, and parallel to Poupart's ligament. On removing the coagulated blood, the femoral artery and vein were exposed for upwards of an inch of their course; the former vessel pulsating forcibly, the latter fully distended. There was now only an oozing of venous blood. My finger passed readily into a cavity extending for more than two inches, directly backwards, on the inner side of the great blood-vessels, and on a level with the origin of the profunda; for about the same extent towards the anterior superior spinous process of the ilium; and for three inches between the integuments and the fascia on the inside of the thigh. I considered it impossible to heal the wound by the first intention; it was loosely lined with lint, and its edges slightly approximated.

September 6th, 10 a.m. Mr. Heaviside, Mr. Guthrie, and myself attended with Mr. Lightfoot. The patient has had some sleep, and his mind is calm. He has felt no pain, excepting that peculiar and distressing sensation in his foot, which he distinguishes from common pain. His pulse 130, very small. He has lost all feeling in the lower half of his leg, which is cold, pale, and cadaverous. No pulsation is to be felt in the arteries of his in-

jured limb. Towards evening, a distinct difference of temperature was observable at about four inches above the left knee, and the cadaverous coldness had extended a little higher up the leg. He now thought he perceived the warmth of the hand applied to his ankle; he said "he had more life in his leg;" he had slept a little, and seemed refreshed.

September 7th. Pulse 120 and fuller. The cadaverous coldness extends as high as the insertion of the ligamentum patellæ, and a slight degree of discoloration is now beginning to appear around the limb at this part.

In the evening the pain in his leg was much increased; he distinguished to what part of his foot the warmth of my hand was applied for a few seconds; but at the first applying it, he felt nothing: the tibial and peroneal muscles had still some power to move the foot: pressure in the ham produces intense pain in the shin. From this time it will be sufficient to mention generally the changes that took place. On the 8th, he was ordered to take at night, twelve of *Magendie's Gouttes Calmantes*, which not procuring sleep, he took fifteen the next evening; and on the 10th he took twenty-five, which dose he continued daily until the 20th, when he was ordered to take five more on account of the violence of the pain which he suffered chiefly in the morning. On the

12th it was judged necessary to give him the infus. cinchonæ. which was changed for the decoction on the 14th.

At this time (the ninth day from the period of the accident) the discoloration occupied the same extent as before-mentioned, except that it had spread a little on the inside, having throughout become gradually of a deeper hue. He still perceived the warmth of the hand applied over the metatarsal joints, or to the heel; and a vein on the inner side of the foot appeared on the 11th to swell below pressure. There was hitherto no vesication, nor any sign of the approach of inflammation at the margin of the discoloration, except great tenderness. There was a very faint yellowish tinge on the knee, which to the touch seemed colder than the thigh. The calf was more sensible to firm pressure than it had been, and its hue, which was like that of a bruise, and not livid, when dispersed by firm pressure did not return, so that on the morning of the 14th I recognized the pale spots made by the pressure of my finger the preceding evening. Just above the ankle the skin was pale; the ankle itself, and the foot, having gradually assumed a deep transparent colour, not unlike that of new mahogany, and which did not disappear under any pressure. The toes were dried and shrunk, they were also paler than the ankle, and their substance was transparent, their appearance being precisely that of similar parts

dried and immersed in turpentine. They, however, never lost their cuticle, which is stated by one author always to be lost previously to the desiccation of parts suffering dry gangrene. After the 15th of September, the patient's pulse had risen to 110, and upwards; his spirits frequently failed; he became costive; and he had a complete pyrexial attack every afternoon; during the hot stage of which, in general, though occasionally at other times upon making some necessary exertion, he lost daily an ounce or two of blood from the wound.

On the 18th. He had suffered considerably for three days, from febrile irritation, and from costiveness; the medicines prescribed succeeded, however, this day in relieving him, and he was ordered to take three grains of the sulphate of quinine, with a fluid-drachm of the tincture of cinchona in each of his draughts, of which he took six in the twenty-four hours. The wound, which till lately had gone on in all respects exceedingly well, was now glassy, and discharged unhealthy matter. Patches of discoloration appeared above the femoral condyles. There was an increase of heat below the knee, and some few vesicles with an increase of redness were observed around the margin of the old discoloration. The whole leg was somewhat tumefied, but not emphysematous; and he took a much longer time

than formerly to distinguish when the warmth of the hand was applied to the foot.

On the 20th, the wound had resumed a granulating surface, and it retained from this time a healthy appearance, continuing, however, to discharge daily a small quantity of blood. One piece of lint introduced on the night of the accident into the bottom of the wound, having been till now entangled in the granulations, came away this day; and firm pressure being made around the wound, it was followed by a small quantity of healthy pus, streaked however with sanies.*

* From the 10th of September, the 5th day after the accident, the temperature of the injured limb was measured by means of Fahrenheit's Thermometer, and the results were as in the following table. It appears that the heat of the toes continued nearly the same, being always a little less than that of the chamber; whilst the heat of the ankle, exceeding that of the room, varied considerably.

Sept.	Room.	R. Toes.	L. Ham.	L. Calf.	L. Ankle.	L. Toes.
10.	69°.	90°.	70°.	—	—	66°.
11.	69°.	—	90°.	75°.	—	69°.
12.	74°.	—	90°.	80°.	—	72°.
13.	—	—	95°.	81°.	—	71°.
14.	—	—	96°.	82°.	80°.	70°.
15.	—	—	96°.	82°.	80°.	70°.
16.	—	—	96°.	75°.	71°.	68°.
18.	—	—	100°.	75°.	71°.	68°.
19.	—	—	95°.	85°.	72°.	—
21.	64°.	—	—	—	72°.	—

Tuesday, September 23d. Mr. Heaviside, my Father (who had attended since his return from the country, on the 9th), Mr. Guthrie, Mr. Lightfoot, and myself, being present, a coagulum of blood as big as a walnut, and beginning to have its surface broken by putrefaction, was this day pressed up from the depth of the wound. There followed immediately, a quantity of dark coloured blood; and upon this being sponged up, an alarming hemorrhage commenced. The blood flowed with great force from several orifices into a cavity capable of containing two ounces or more, extending to the head of the femur, and to the triceps, and opening into the external wound. After an arduous operation the bleeding vessels were secured; but the patient was exhausted; he sunk, and died at midnight.

DISSECTION.

The arteries were all impervious in the neighbourhood of the wound; but the inguinal, the femoral, and the profunda veins were found separated by ulceration, and terminating by open mouths in the depth of the wound. These vessels had all been tied, so that the patient died from constitutional debility the effect of an intemperate life, of the injury in his groin, and of the loss of blood previous to the operation, with that of about a pint and a half which escaped rapidly while it was being performed. The muscles of the

leg were rather livid when first exposed, but not at all disorganized. It is remarkable that although there were some traces of florid blood in the anterior tibial artery, the femoral was found distended below the seat of the wound, with blood of the deepest modena hue. The colour of the calf of the leg was become very much darker since yesterday morning.

This patient's sensibility to warmth applied but just above the desiccated parts of his foot (although it was insensible to all other impressions) proves its nerves to have retained to the last some degree of vitality: and it may be worthy of inquiry, whether the drying of his toes, their cuticle remaining on, and the rapid desiccation of the limbs of some other patients, are not to be attributed (rather than to evaporation alone) to some degree of activity remaining in the *absorbents* of their affected limbs.

The state of this patient's limb, and the history of his case demonstrate that the powers of his constitution were expended to no beneficial end; no effort being made to separate the dead parts from the living, whilst the remains of life in the calf of his leg were to be preserved.

In conclusion I may mention an observation of my father's, which I find confirmed in the writings of others, that the pale, or white dry gangrene, as

it is more commonly called, takes place only where the veins of the parts affected are not obliterated; and that, on the contrary, the black dry gangrene is one result of the obliteration of both sets of blood vessels.

CASE

OF

ULCERATION AND RUPTURE

OF THE

STOMACH.

By JOHN ELLIOTSON, M.D. Cantab.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, AND OF THE CAMBRIDGE PHILOSOPHICAL SOCIETY, AND PHYSICIAN TO ST. THOMAS'S HOSPITAL.

Read March 9th, 1824.

YESTERDAY week, Monday, March 1st, I was summoned, at half-past eight in the evening, to an unmarried lady, whom I had never seen before, about forty years of age, tall, thin, and of the melancholic temperament. She was standing in her bed-room, leaning on the neck of a female servant, and groaning with agony at the pit of the stomach. Her features, naturally long and sharp, seemed now unusually so; her swarthy pallid complexion was become cadaverous, and the expression of her countenance was that of the most dreadful suffering. She was shivering with cold, though before the fire, and her hands were icy and blue. Her pulse was a hundred and twenty, but neither full nor hard, nor particularly weak. Her breathing was very quick and short. She retched

every now and then, but vomited nothing more than the barley water she was drinking.

I was informed that she had been in this state rather above an hour: that she first complained of chilliness for about five minutes, and was observed to fix her eyes on vacancy for a minute or two, and then suddenly cried out with pain at the pit of the stomach. She was supposed to have taken cold by walking to church the preceding day, which was wet, instead of going in the carriage, as usual, with the rest of the family. She had dined upon pork a few hours before the attack, but assured me that, though very dyspeptic, she found pork agree with her better than any other kind of meat. Her bowels had been open in the morning. She had no hernia.

I instantly gave her sixty drops of tincture of opium. This was soon rejected, at least in part, and, as she found no relief, I gave her sixty more in twenty minutes. Twice more I repeated this dose, but without benefit. From the first there was pain of the epigastrium on pressure, but this evidently increased, although the constant agony remained as before. It was now near midnight, and I took a lancet from my pocket book and bled her in the arm to the amount of about twenty ounces. She did not become faint, nor did she experience the least relief, and the blood was found the next morning neither cupped nor buffy. I then

gave her the fifth dose of sixty drops of tincture of opium, and she soon found herself considerably better, but no drowsiness, headache, or other effect ever took place, except constipation and thirst, in producing which inflammation must have had a share.

The next day, she still remained better, but there was so much tenderness of the abdomen left that I prescribed a very large blister, and, to counteract the constipating agency of the opium, ten grains of calomel. She told me she was much better, and that she had "felt that life was ebbing fast the evening before, till she took the last dose of opium." There was great thirst, but no foulness of tongue.

On Wednesday—the third day, the tenderness was so great that the least pressure with the point of a finger was intolerable, and it now extended all over the abdomen; the pulse was still a hundred and twenty, but small and feeble; the coldness, and the shortness and rapidity of respiration continued; the countenance was more ghastly than ever; the bowels had not been affected by the calomel; the tongue was still clean, but the thirst was undiminished, and she had been incessantly drinking water so hot that no one but herself could hold the glass from which she drank it. Five grains of calomel were ordered to be given every three hours till an evacuation was procured, and

clysters, each containing three ounces of sulphate of magnesia and six drops of croton oil, to be administered.

In the evening I found that several doses of calomel had been taken, occasionally ten and fifteen grains at a time, but rejected (as was always the case, she said, when she took calomel), and that the clysters had brought away no fæces. I therefore ordered a drop of croton oil to be given by the mouth every four hours till the bowels yielded, and an injection to be administered containing twelve drops.

On Thursday morning—the fourth day, I found that the clyster had been given, and that three pills, each containing a drop of the oil, had been taken and had remained on the stomach, and that, since the exhibition of the last, a motion had taken place. Her constant pain was infinitely less, and she now bore pressure pretty well except at the epigastrium: but the pulse was a hundred and forty, and she was restless, and said her strength was greatly reduced. She had several motions in the course of the day, and expired at five o'clock in the afternoon, perfectly sensible.

From the dreadful agony which was felt from the first; its sudden commencement, and that at the pit of the stomach, and its greater intensity there throughout the disease than in any other

part of the abdomen; the ghastliness of the countenance and her icy coldness even when I first saw her; the absence of fulness and all hardness in the pulse, even during the evident existence of intense abdominal inflammation; and the rise of this at the epigastrium and its diffusion all over the abdomen, I apprehended the stomach was ruptured, and I very earnestly requested permission to examine the body. The inspection took place on Saturday morning.

The abdomen was prodigiously distended, and, on opening the peritonæum, a large quantity of very fetid gas escaped. On the whole parietal portion of the peritoneum was a layer of fibrine, as also on the whole convex surface of the liver, the anterior surface of the stomach and of the omentum, and on much of the intestines. It was for the most part readily peeled off, but had effected adhesions between some portions of the small intestines, and between some portions of the peritoneum and omentum. A good deal of yellowish fluid with white flakes was collected in the upper part of the abdomen, such as is the mere product of inflammation, but I could discover no effusion of the contents of the stomach. In the anterior part of the cardiac half of the stomach, a little below the small curvature, was a perfectly circular aperture, with a smooth edge, large enough to admit the end of the little finger, and the surrounding part was of a dark colour to some extent. The stomach con-

tained a good deal of soft dark matter, which readily escaped on moving or pressing the organ. On examining the interior, a large ulcer was discovered, two inches in length, broad at one extremity and gradually narrower towards the other, with smooth edges, and the surrounding parts were greatly thickened, and very red and hard. The ulceration was gradually deeper from the narrow extremity to the other where the rupture had occurred.

I was informed that for several months she had been greatly troubled with dyspepsia, was observed to be continually putting her hand to the pit of the stomach, where she complained of an uneasiness which she was in the habit of relieving by copious draughts of *hot* water, and that she had lately grown thinner.

In an interesting paper on cases of this kind, published in the eighth volume of our Transactions*, Mr. Travers has stated the chief diagnostic symptoms to be, First, Sudden, most acute, peculiar and *unremitting* pain, radiating from the pit of the stomach or navel to the circumference of the trunk

* The indefatigable pathologist, Dr. Abercrombie, of Edinburgh, has just published some cases of this kind that occurred to himself, with references to others in various authors. *Edinburgh Med. and Surg. Journal.* Jan. 1824. A case that lately happened in the practice of the writer of one of the most original, laborious, and important pathological works ever published, M. Laennec, will be found in the *Revue Medicale.* Mars 1824.

and even to the limbs; Secondly, Coeval *rigidity of the abdomen;* and, Thirdly, A *natural pulse* for some hours, till the symptoms of peritonitis begin.

In this case, the pain did remit:—after the fifth dose of opium she became comparatively easy, and remained so for twenty-four hours*. The rigidity of the abdomen did not strike me. The pulse was 120 from the first.

The grounds of my diagnosis have been already mentioned.

* In Dr. Laennec's case, alluded to in the last page, the pain lessened in the evening after the rupture, and on the third day scarcely any was felt.

Dr. Carmichael Smyth recorded, between thirty and forty years ago (Medical Communications, Vol. II. p. 467 et seq. 1790), the case of a young lady whose stomach suddenly burst to an extent sufficient to admit a quill, in a round ulcer, about the size of a sixpence, that had destroyed all but the peritoneal coat of the organ. The rupture occurred on her going to bed, and instantly caused violent pain which lasted great part of the night, but she complained of none in the morning when Dr. C. Smyth was summoned to her, and passed the day tolerably well. She expired suddenly in the evening.

In his short but excellent narrative, this distinguished physician so well described the symptoms and the appearances on dissection, and gave so correct a view of the nature of the case, that I should have judged it superfluous to make the present communication, but for the illustration that our diagnosis (nor indeed our prognosis as far as it depends upon the diagnosis) must not be influenced by the continuance or remission of pain.

ON A

NEW VARIETY

OF

EXTRA-UTERINE PREGNANCY.

By GILBERT BRESCHET, M.D.

CHEF DES TRAVAUX ANATOMIQUES DE LA FACULTE DE MEDECINE DE PARIS, CHIRURGIEN EN CHEF DE L'HOSPICE DES ENFANS-TROUVES, PROFESSEUR AGREGE A LA FACULTE DE MEDECINE, PROFESSEUR PARTICULIER D'ANATOMIE, MEMBRE TITULAIRE DE L'ACADEMIE ROYALE DE MEDECINE, DE LA SOCIETE PHILOMATIQUE, ETC.

Read Feb. 23d, 1824.

IT is agreed by modern anatomists that the product of generation passes from the ovarium into the fallopian tube, before entering the uterus where it is to acquire its full developement. The ovum, however, does not invariably follow this regular course, but may be impeded at some point in its passage; the pregnancy is then termed extra-uterine, and of this there are three varieties. In the first variety, *graviditas abdominalis*, or ventral pregnancy, the embryo is in the abdominal cavity, and its involucra form adhesions to the viscera and the peritoneum. In the second, *graviditas ovariana*, ovarian pregnancy, the fœtus is developed in the ovarium; and in the third, *graviditas tubaria*, or tubal pregnancy, the ovum does not pass the tube, but acquires a certain growth, varied by circumstances, in that canal. I am of opinion that a

fourth species of extra-uterine pregnancy may be admitted, which I shall term, *Graviditas in Uteri substantia.* Of this, few cases have been recorded, but they are from authorities of weight. It is a case of this description which I have now the honour to submit to the Medical and Chirurgical Society, and it is the first which has been published in France or England.

In this description of extra-uterine pregnancy, the fœtus is enclosed in the parenchyma of the uterus itself, excepting that a cyst separates it from the substance of the viscus, as is the case in the instance of foreign bodies introduced into organic textures, and as is particularly observed in hydatids and some other Zoophytes. No communication exists between the cavity containing the fœtus and the cavities of the abdomen or uterus. I have lately received from Drs. Bellemain and Lartez, an anatomical preparation, illustrative of this species of extra-uterine pregnancy.

Madame B., after experiencing the usual disagreeable feelings which accompany pregnancy, was attacked on the 10th of June, 1823, with urgent vomiting and violent pain in the hypogastric region, extending to the rectum. She suffered also from frequent fits of fainting, and from a general sense of debility. The countenance and lips were pallid, and the pulse small. Rest was recommended, and an antispasmodic mixture prescribed.

The abdomen, which had not at first indicated pain on pressure, now became exquisitely tender. On examination per vaginam, a well defined enlargement of the uterus was discovered without any developement of the cervix. The patient stated that she was three months gone with child. Twenty leeches were applied to the abdomen, and a warm bath was directed to be used. All the bad symptoms increased, and on the 11th the patient died. Her medical attendants attributed her death to a sub-acute inflammation of the peritoneum, or to the rupture of a great blood-vessel in the abdominal or pelvic cavity.

On opening the abdomen, a considerable effusion of blood, partly liquid and partly coagulated, was discovered in the cavity of the pelvis. The uterus, although increased in size, had not risen above the brim of the pelvis, and at its fundus, towards the left side, was discovered a rupture which included the peritoneum and the cellular substance of the viscus, without establishing any communication between the cavities of the abdomen and the uterus, as was at first supposed. Through this rupture of the uterus, a fœtus included within its membranes protruded. The drawing which accompanies this memoir, represents the preparation in question, in which the uterus, from five to six inches long, and four broad, presents a cavity of sufficient size to contain a hen's egg. In it were found some mucosity or albumen, and a mem-

brane, which was certainly the membrana decidua of Hunter. The parietes of the uterus were sixteen to eighteen lines in thickness; consequently, this organ was much larger than when unimpregnated. The ovaries were healthy; the right fallopian tube was obliterated in its upper half, and the left tube in its whole extent. The most careful dissection could not detect its canal, nor could any liquid be forced through it by the syringe; but the lower orifice of the tube was preserved in the superior and left angle of the cavity of the uterus, and this cavity was much below the cavity containing the fœtus. The cyst containing the fœtus, was formed in the substance of the fundus of the uterus, above the insertion of the left fallopian tube. It was not lined by any membrane. In size it equalled an egg, and on its surface, which was very irregular, we observed the orifices of numerous vessels or uterine sinuses; and in these sinuses were seen some vascular threads or penicilli, forming the rudiments of the placenta. The partition dividing this cavity from the uterus, was half an inch thick, but the upper portion of its parietes, i. e. the part which corresponds with the fundus of the uterus, and on which the rupture took place, was only two lines thick. It was, however, evidently formed of two distinct parts, namely, the peritoneum, and the substance of the uterus. I make this remark, because some Physiologists * are of

* Carl. Gust. Carus, zur lehre von Schwangenschaft und

opinion that in this species of extra-uterine pregnancy the ovum escapes, and lodges between the peritoneum and the uterus.

We observed the formation of numerous vessels in the substance of the uterus, immediately surrounding the cyst, indicating great activity of circulation; no opening or communication existed between the cavity containing the fœtus and the cavity of the uterus, properly so called.

The fœtus, with its involucra, was several inches long. The external surface of the chorion exhibited at a great many points, instead of a regular placenta, cotyledons, as it were, attached to the chorion by long pedicles. This arrangement resembles that of the ovum in ruminating animals,* and one of these bundles of vascular penicilli, a species of cotyledon, was moreover employed in connecting the ovum with the mother.

I am indebted to the friendship of Dr. Albers, of Bremen, for the knowledge of some cases similar to the one I have described. In a letter I received from him a short time before his death, he informed me that he was called to a lady, three months advanced

Geburt physiologische, pathologische und therapeutische Abhandlungen, &c. Leipsig, 1822.

* Ueber das Gebaerorgan der Menschen und der Saugthiere in Schwangern und nicht Schwangern Zustande von Dr. Joh. C. Gotfried. Jorg. Leipsig. 1808.

in pregnancy, who, after getting up in perfect health, was suddenly seized in the course of the morning with very violent pains in the abdomen. At his first visit, Albers suspected that the pregnancy was extra-uterine, and that the symptoms resulted from the rupture of the fallopian tube, or of a cyst, including a fœtus. A few hours afterwards, he found his patient pale and cold as a corpse; the lips of a violet blue; the pulse frequent and very small. She was lying on her side in a state of quiet, and only complained when questioned as to her feelings. She then stated that she suffered violent pains of the abdomen, chiefly affecting the umbilical region; these pains continued till six in the evening, when they ceased: the patient, however, was conscious of her approaching end, and she expired a few minutes afterwards. Albers assured me that at his second visit, he was perfectly certain of the nature of the disease, and referred to his learned friend Dr. Olbers, in confirmation of this assurance.

On opening the body twenty-four hours after death, in the presence of Drs. Schmidt, father and son, he discovered a rupture of the uterus, through which a very small fœtus had escaped; and, in the letter in which he related the case to me, he mentioned that the ovum had developed itself in an extraordinary manner in the substance of the womb, and that he could discover no communication between the cyst and the uterine cavity. I receiv-

ed no farther particulars of this case, as it was Dr. Albers' intention to transmit it to the Medical and Chirurgical Society of London. The death of my lamented friend however frustrated his intention.*

There are only two cases on record, similar to those I have now described, which I believe are not much known.

The first is to be found in the first volume of the memoirs of the Josephine Academy of Vienna, and is related by Professor G. Schmitt†.—A woman aged 28, had been pregnant five times; and the four first deliveries had been effected in the most favourable manner, but in the succeeding pregnancy she only went to the fifth month. This woman's health had been invariably good, with the exception of slight hysteria with which she was attacked in her last gestation. About a month be-

* In a letter which I have just received from Dr. Roget, Secretary to the Medical and Chirurgical Society, I am informed that no communication has been received from Dr. Albers on the subject alluded to. Dr. Albers must have examined two cases of this nature, for it is mentioned in Dr. Carus' work that Albers a short time before his death, purchased for a considerable sum an anatomical preparation in which the fœtus was in the substance of the uterus, and that he intended to forward a description of it to the Medical and Chirurgical Society of London.

† Memoires et Observat. de l'Acad. Medico-Chir. de Vienne. Vienne 1801.

fore her death, on returning from a short journey, she was seized with a sensation of pain and weight in the stomach. This dull pain continued for ten days, and was then accompanied with vomiting. The patient did not believe she was with child, because the menses continued to flow, which had never been the case in her former pregnancies, nor did she experience the same feelings as before. On examining the body, it was found that the abdomen contained a large quantity of blood; the uterus was in a degree developed and it was larger on the right than on the left side. In the former part there was a rupture. The cavity of the viscus, lined by a shaggy membrane, did not communicate with the sac in which the fœtus was. This cavity was formed in the substance of the uterus itself, and the fœtus appeared to be about six weeks old. The internal orifice of the right fallopian tube was quite closed, whilst that of the left side was open.

A similar case has been described by Mr. Hedrich;* and Professor Carus of Dresden has given a drawing of the preparation†.

A peasant aged 35, the mother of three children, and who had likewise miscarried twice, thought herself again pregnant, because her menses had not

* Archiv. de Horn. Sept. and Oct. 1817.

† See Dr. Carus' work already quoted.

appeared for two months. Returning one evening from her work, she was seized with violent colic succeeded by vomiting, burning thirst, pallid countenance, shivering, and partial paralysis, alternately with spasms. These symptoms became rapidly worse, and the woman died the next day.

The abdomen was filled with blood, and the uterus increased in size. This organ, somewhat inflated, was empty, and its fundus was raised as high as the brim of the pelvis. On its right side, nothing was observed except an hydatid about the size of a nut. On the left side, there was a red prominence furnished with numerous blood vessels which gave it the appearance of an inflamed membrane; and upon this projection, there were two ruptures in the thinnest part of its parietes. Through these apertures a probe passed into a sacciform cavity containing an embryo of from eleven to twelve weeks gestation enveloped as usual in the amnion and chorion; and upon these membranes the rudiments of the placenta were clearly distinguished. The sac inclosing the embryo was entirely separated from the proper cavity of the uterus, which organ was much larger than in the unimpregnated state, and lined by a spongy membrane, which was considered as a modification of membrana decidua. The orifice of the left fallopian tube was not to be detected by the most careful examination; it was indeed obliterated in its whole extent.

M. T. F. Lobstein, in a report which he addressed to the faculty of medicine at Strasbourg relative to their anatomical museum, speaks of "a preparation in which a fœtus is situated in the substance of the parietes of the uterus, without its being possible to account for its presence there." Being anxious to obtain a fuller detail of this preparation I requested M. Lobstein to examine it, and from his account it appears that it belonged in 1736 to the old university, and has been erroneously described in the catalogue. The embryo with its involucra was really in the cavity of the womb, and the placenta closely adhering to the membrana decidua was taken for the substance of the uterus, and for the lower and internal layer of it.* This case must not, therefore, be any longer considered as extra-uterine pregnancy of the nature I have been describing†.

Just as I was preparing this work for publication, I saw, in a pamphlet which has lately appeared, a case similar to those which form the subject of my essay. The author of the pamphlet evidently mistook the nature of the case. A girl aged 23, pregnant of her first child, well made, of a bilious temperament, and habitually silent, was admitted into the hospital on the 5th June, 1821. Her health

* Letter of M. T. F. Lobstein. Strasbourg, 1823.

† Compte rendu à la Faculté de Médecine de Strasbourg, sur l'état actuel de son Musée anatomique, suivi du catalogue des objets qu'il renferme. Strasbourg, 1820.

appeared very good until the 17th, when she was attacked with slight vomiting. She appeared to be eight months advanced in pregnancy, and this corresponded with her own account. The cervix, however, preserved its usual length, and the orifice was not perceptibly dilated. On the 18th, the vomiting was succeeded by faintings and a small frequent pulse. The abdomen, in which there was much shooting pain, appeared to contain something more than a gravid uterus, and conveyed to the hand the sensation of an obscure fluctuation. When the patient was interrogated as to the seat of the pain, she pointed to her neck and right shoulder. The symptoms soon became more urgent; the pulse beat feebly, a cold sweat spread over the body, and the countenance indicated extreme danger. The night passed in agony, and her death, preceded by delirium, took place early on the morning of the 19th. The surgeon of the hospital, after ascertaining that delivery could not take place in the natural manner, proceeded to the Cæsarean operation. On opening the abdomen, he discovered a fœtus in that cavity, with the head uppermost. Removing this fœtus, together with the placenta, and numerous clots of blood which covered the large intestines, he perceived an extensive rupture at the fundus of the uterus, which presented a remarkable appearance. This viscus, formed of two cavities, placed one above the other, and without any communication between them, bore the same relation as usual to the parietes of the pelvis, and the ab-

dominal viscera. The upper division, containing the child, occupied the fundus of the uterus, and was triangular in shape. Its parietes, in the part corresponding to the rupture, were thin and membranous. The lips of the wound were fringed and dark coloured at some points; the lower part of this extraordinary sac was separated from the other by a partition half an inch thick. There was no trace of any communication between the two cavities. The broad ligament, the ovaries, and the tubes of the one side differed in their position from those of the other. On the right side they occupied the upper angle of this double uterus, which, externally viewed, had the appearance of a womb under common circumstances. On the left side, they were placed nearly in the centre of the left margin of the uterus, and were hidden in the cavity of the pelvis. A line drawn between these two points of insertion corresponded exactly with the division of the two cavities. The interior of the fœtal sac was precisely similar to that of the uterus after delivery. The placenta was inserted posteriorly and inferiorly in such a manner, that the partition contributed somewhat towards its formation. The proper cavity of the uterus, and likewise the vagina, were natural. The uterine cavity was separated, superiorly, by the partition already described from the fœtal sac, and only communicated with the vagina. A sort of fatty membrane adhered feebly to its parietes.

The fœtus, which was a female, only weighed four pounds and a half; the umbilicus did not correspond to the middle of the body; the head was three inches and a quarter in diameter longitudinally, and two and a half inches transversely. The placenta was twenty-two inches in circumference, and three lines in thickness. The involucra appeared very thick.

The existence of this species of extra-uterine pregnancy being thus established, it will be interesting to investigate the cause and modes of its formation.

In the natural sciences, we must often confine ourselves to the mere observation of facts. It is easy to explain them when the mind is not scrupulous; but it is a proof of wisdom to attach little importance to explanations, and to suggest them only as speculations.

First Explanation.—It has been supposed that in this species of extra-uterine pregnancy, the two individual ova resulted from the same impregnation, and that the one had penetrated the other. There are more than twenty cases on record of fœtus which have been developed in other fœtal bodies. In a late instance, the remains of a fœtus were found in the scrotum and testicles of a new-born child; and I have often discovered such fragments in the abdomen of female children some months old. But it is impossible to establish any resem-

blance between cases of this description, and those which form the subject of my Essay. In the former cases it is not so much a child as the remnants of a fœtus which anatomists have discovered. Whilst, in the extra-uterine pregnancy of which we are treating, the embryo or fœtus has been regularly developed, and its death has either preceded or followed that of the mother. Almost all these fœtus have been found in adult women, who have borne several children; and not only the child, but the involucra and placenta were formed in the manner most favourable to the support of the fœtal life.

Second Explanation.—Some who have not had the opportunity of examining these cases have supposed that the ovum might have passed along the fallopian tube upon the body of the uterus, under the peritoneum. This point is easily decided by dissection, as in examining the fœtal pouch the peritoneal membrane may be easily distinguished from the substance of the uterus. These two structures could be easily separated on the lips of the rupture, shewing that the external portion of the parietes of the sac were formed of peritoneum, and a layer of the substance of the uterus. The second explanation is, therefore, not more admissible than the first.

Third Explanation.—Can we account for the formation of two uterine cavities, and the pre-

sence of a fœtus in the upper one, by admitting the existence of a horizontal, incomplete partition dividing the uterus, and which in the progress of time becomes complete, and thus prevents all communication between the superior or fœtal, and the inferior or vaginal cavities?

We know of no instance of a uterus divided by a diaphragm, at right angles to the longitudinal axis of the organ. The horned wombs have a median partition, but it is always parallel to the longitudinal axis. If any aperture had existed, some trace of it would have been discovered, which we were unable to do.

Fourth Explanation.—It is possible to imagine that the lower part of the fallopian tube may have been obliterated, and that on the arrival of the ovum at the part thus obstructed, inflammation having been excited, it forced for itself a way into the substance of the uterus. The ovum would here be in a situation similar to a ball projected by gunpowder, penetrating the body, which is either carried to the surface or arrives at a visceral cavity by the process of an eliminating inflammation, which forms a way for it anteriorly, and closes the passage behind as it advances. The obliteration and thickening of the inferior part of the fallopian tube seem to give weight to this explanation. I would rather attribute the obliteration of the tube

to inflammation preceding the descent of the ovum, than admit that this obliteration existed before impregnation.

A fifth explanation of this phenomenon may be found in a peculiar anatomical formation of the fallopian tube. It is known that at the inferior part next the uterus, there are to be observed on the inside of this canal the mouths of several vascular sinuses. Is it not possible that the ovum may have gradually dilated the orifice of one of these vessels, and, that, constantly impelled by the peristaltic force of the tube, the ovum may have formed a cavity for itself in the substance of the uterus towards its fundus, instead of passing into the cavity of the uterus. The fallopian tubes do not terminate at the external and upper part of the uterus, but penetrate into the substance of the uterus, as the ureters do into the bladder. If we admit the possibility of the case I have just stated, it will be seen that the ovum will have had a very short space to traverse in order to get into the substance of the uterus itself.

Sixth Explanation.—If we attempt to explain it on the ground of organic malconformation, analogy will supply us, in the instance of animals, with materials for another explanation.

In many of the mammalia the uterus is horned; that is, it is divided into two by a partition, and the

body of the viscusis separated into two distinct cavities. The Monotremata, the Ornithorynchi, and the Didelphi are examples of this arrangement, which indeed may be seen to a certain degree in the uterus of the human fœtus, and that of new born infants. I have repeatedly observed it myself, and M. Dumeril discovered in the body of a woman he lately opened, a double uterus, that is, the cavity of the viscus as well as the vagina were divided by a partition. Now, may it not be possible, that in such a uterus as this, when a fœtus enters one of the two cavities, it may distend it and communicate by its developement such motion to the partition that from longitudinal it may become transversal? My opinion is, that the explanation which supposes the ovum to enter one of the orifices of the uterine sinuses, is the most simple and admissible.

All the facts related in this paper prove,

1st. That extra-uterine pregnancies may occur in the substance of the uterus itself.

2dly. That in this as in all the other varieties of extra-uterine pregnancy, gestation arrives slowly and with difficulty at the ordinary period, and I think that in this variety, the ovum must experience more difficulty in its developement, than when it is in the fallopian tube.

3dly. That, at a period difficult to determine, a

rupture takes place, accompanied with effusion of blood into the abdomen, and death is the quick and inevitable consequence.

4. That the membrana decidua exists in the uterus before the arrival of the germ, since in all my observation this membrane was distinctly formed although the tubes were obliterated.

5. That the membrana decidua does not belong to the embryo, properly so called, and that it is not indispensable to the nutrition of the fœtus.

6th. That the uterus may be developed, and its cavity enlarged without the presence of a fœtus in the usual place.

7th. That the placenta is not always formed in the human species, so as to constitute a uniform mass or cake, but that it may be developed at different distinct points of the ovum in the form of vascular penicilli as is seen in ruminating animals. The Solipeda for example.

A CASE

OF

FALLOPIAN TUBE PREGNANCY.

By JOHN ELLIOTSON, M. D. Cantab.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, AND OF THE CAMBRIDGE PHILOSOPHICAL SOCIETY, AND PHYSICIAN TO ST. THOMAS'S HOSPITAL.

Read March 23, 1824.

A ROBUST WOMAN, aged thirty, who had been married a year and a half but believed she had never been pregnant, was perfectly well, with the exception of nausea which she had experienced for a fortnight, when, after taking her tea one evening, she was suddenly attacked with vomiting and with violent pain of the abdomen, especially low down. These symptoms ceased after a time for about three hours, and then returned, and continued till within a few hours of her death, which took place on the third day, at 10 o'clock a.m.,—forty hours from the commencement of the attack.

During the whole of the day and night preceding her death (I did not see her till the afternoon of the second day), there was, in addition to the vomiting, extreme tenderness of the whole ab-

domen; the bowels were not confined; the pulse was a hundred and twenty, not full, hard, or small, but very weak; the countenance, naturally florid, was deadly pale; there were frequent syncope and extreme restlessness. She told me that it was six weeks since she had menstruated, and she had no idea of being pregnant.

The case completely puzzled me. The abdomen was exquisitely painful on pressure, yet, as in the case read a few meetings since of ruptured stomach, there was neither the full pulse of some abdominal inflammations, nor the hard and small pulse of others:—the pulse indicated no inflammation. I could not think there was rupture of the stomach or gastritis, because the pain had not begun in the epigastric region, and was seated chiefly in the hypogastric; nor could I think there was rupture of the intestinal canal or enteritis, because the bowels were relieved as in health. Had an aneurism or single blood-vessel of any size burst into the peritoneum, I fancied the event would have been more rapid*. The suddenness

* A patient of mine last year in St. Thomas's Hospital, whose lungs were somewhat diseased, was sitting up in bed one morning, not particularly ill, when he suddenly vomited some blood, fell back, and died *in two or three minutes*. The stomach was found distended to the utmost, and, on opening it, an immense coagulum of blood appeared, forming a beautiful mould of the organ. Yet so small was the ruptured vessel that I could not discover it, nor any more disease of the stomach than a trifling abrasion of the mucous membrane in one spot.

of the seizure, the extreme feebleness of the pulse, the frequent syncope, and the deadly paleness of the face, which but the moment before the attack was florid, convinced me that something was ruptured, and of course in the abdomen. This opinion I gave to the gentleman first summoned to the patient, but what was ruptured I could not imagine.

Permission was granted me to inspect the body.

On opening the abdomen, a quantity of bloody serum poured forth; and a large collection of coagula appeared, especially at the lower part. There was not the least appearance of inflammation, but, on the contrary, extreme paleness throughout.

In one of the many double handfuls of coagula

In internal hemorrhage of the epigastric artery, when this vessel has been wounded in tapping the abdomen, I was aware that death did not take place immediately; sometimes not for eight and forty hours, sometimes not for a much longer time. But the wound might occasionally be very small (the artery was only punctured with the point of the trocar in a man who died in twelve hours), or the artery entirely divided so as to retract, and the flow of blood into the abdomen would be impeded by the pressure of the neighbouring parts.

I was still less suspicious of hemorrhage because, in the examples of this accident recorded by Dr. Carmichael Smyth and Mr. Ford in the Medical Communications, (Vol. II.) no mention is made of violent pain, vomiting, or other symptoms of irritation, from the effusion of blood into the peritoneum.

emptied into a bowl from the lower part of the abdomen, something like a hydatid, equal in bulk to a middle-sized gooseberry, was seen, and, on a closer inspection, an embryo was discerned through the smooth transparent membranes which composed it. On putting the ovum into water, innumerable flocculi appeared all over its surface. A large number of fragments of Fallopian tube were also mixed with the coagula, and, to each of two opposite parts of the ovum, a fragment of the tube adhered.

The right Fallopian tube seemed broken off near its fimbriated extremity, though of course irregularly; but still its length rather exceeded that of the entire left. The lacerated portion and the scattered fragments were of a dark colour, but exceedingly firm, equally so as the rest of the tube and as the other tube. For the distance of an inch, the canal of the tube was pervious and ample; it then became contracted, and at length obliterated.

The corresponding ovarium had a cell near its surface, filled with a red coagulum which was easily dislodged; and, around this cell, except at the part nearest the surface, was a quantity of yellow matter, making two thirds of the substance of the ovarium. The fimbriated extremity of the other tube was completely and firmly grown to a nearly globular tumor, which was situated close

to the left ovarium and was internally of a deep red colour *.

The uterus was four inches and a quarter in length, and three inches at the fundus in breadth. The cervix and os uteri were filled with a colourless and translucent jelly-like matter, which also projected a little way from the latter into the vagina, in the form of a very large drop. In the cavity of the uterus was a beautiful decidua. It was about a quarter of an inch thick, and, on being brought into view, by cutting the body of the uterus from without, resembled the interior of a ripe fig, having a lilac colour, with minute spots of a deep pur-

* It is no uncommon thing to see the fimbriated extremity of one or both Fallopian tubes adherent to some of the neighbouring parts. In our eighth volume (p. 505.) Mr. Langstaff states that he has noticed this particularly in Cyprians. During the last year two patients who had died in the foul ward of St. Thomas's Hospital, and a notorious prostitute who had died in a clean ward, were opened, and the tubes found adherent; both in two of them, and one in the youngest. We have been accustomed to account for the sterility of prostitutes solely by the supposition of exhausted excitability. It is sufficiently explained by these adhesions, which arise, no doubt, from that state of inflammatory turgescence which occurs to the tubes, in common with all the generative organs, during copulation, and causes them to experience a sort of erection and to embrace the ovaria, being scarcely ever allowed to subside. Not that the occurrence can be universal, because old prostitutes, on marrying after transportation, have occasionally been remarked to breed in New South Wales.

ple: it was spongy, and of most delicate texture. Its inner surface was smooth and shining, and formed a cavity close and continuous at the beginning of the cervix. On examination of the interior of the uterus three months afterwards, the parts having remained all the time in spirit, the decidua was of a dark red colour, extremely diminished in thickness, very dense, divided by many fissures in various directions, and not separable into layers; and at each corner, corresponding with the opening of the Fallopian tube, appeared a perfectly circular aperture, rather larger than merely sufficient to admit a bristle, and that on the unimpregnated side was obviously larger than the other.

As far as I have read, the Fallopian tube species is the most frequent of extra-uterine pregnancies, it occurs more frequently on the right side, and its most frequent termination is by rupture and fatal hemorrhage in the early months. The nausea which my patient experienced for a fortnight before the event, just as if the uterus were pregnant, has been noticed in other cases of extra-uterine pregnancy, together with pain and enlargement of the breasts, and all the sympathetic affections common in utero-gestation, and which would probably have arisen in succession had life continued. The woman, I should suppose, had been with child not more than seven or eight weeks:

yet Mr. Blizard saw a case where the rupture took place at least as early as the fifth week*, and, I may add, was not more than sufficient to admit a small quill, excited violent pain, and proved fatal in nine hours and a half. Indeed I do not know that the history of the present case offers any thing unusual. But some of the appearances on dissection deserve attention.

The enlargement of the uterus, the existence of a decidua in it, and the obstruction of the cervix and os uteri by mucus are commonly observed; although, in the case recorded by Mr. Langstaff in our seventh volume, there was no decidua in the uterus, and, in the other recorded by him in the eighth, the cervix and os uteri were not filled with mucus.

I believe that the ovum is at least as frequently in the ovarian half of the tube as in the other. In this instance it was as near the fimbriated extremity as it could be. Where the colour of the abdominal viscera is mentioned, it is always said to be pale, as it is likewise in cases of hemorrhage into the peritoneum from a wound of the epigastric artery, either the presence of blood in the peritoneum not being calculated to irritate, or the hemorrhage preventing inflammation.

* Edinb. Phil. Trans. Vol. V. p. 188. sqq.

The tube was obstructed, but pervious and ample for an inch on the uterine side of the ovum. It is remarkable that the ovum had not passed onwards as far as there was space, yet in some cases there has been no obstruction whatever in the tube,—in one, for example, of Mr. Langstaff's, in Mr. Blizard's, and in one described by Dr. John Clarke*.

In every case that I have read (I do not pretend to have read the greater number on record) the tube was ruptured in one point, but retained the ovum. Here the portion of tube in which the ovum had existed was reduced to pieces, as though it had been shivered by an explosion; and the ovum, completely detached, lay, together with the fragments, loose in the abdomen, mixed with the effused blood. How this circumstance can be explained, does not occur to me; except perhaps from some violent and irregular action of the tube†. But the firmness of every fragment and of the ruptured extremity of the tube renders Mr. Burns's idea‡ of sloughing in these cases improbable; to say nothing of the absence of all fœtor and pre-

* Transactions of a Society for the improvement of Medical and Chirurgical Knowledge. Vol. I. p. 220.

† The tubes have the power of motion, because in rabbits during heat, they are said to be seen writhing in a remarkable manner.

‡ The Principles of Midwifery, p. 135.

vious derangement of health, nor of the fatal hemorrhage, attending the rupture, and the facility of injecting all the vessels * notwithstanding nature's custom to attempt the abolition of arterial canals which run towards mortifying parts.

The circular apertures in the decidua opposite the openings of the Fallopian tubes are worthy of notice, because this membrane is often said to consist of two layers; the exterior perforated opposite the openings of the tubes, but the interior continuous. The ovum, passing from the Fallopian tube, is thought to go through the opening in the external layer against the internal, and this, being pushed before the ovum, to become the decidua reflexa †. These apertures were unfortu-

* See Mr. Langstaff's case. Vol. VII.

† Dr. Hunter, (Anatomical Description of the Human Gravid Uterus and its Contents. 1794. p. 55.) speaking of the contents of the uterus after the earlier months of pregnancy, says, "When the decidua is pretty thick it is often divisible into two or more laminæ. Its outer stratum or lamella is perforated at each Fallopian tube, and at the os uteri."

I noticed no opening in the decidua at the cervix uteri, when inspecting its inner surface, yet Dr. Hunter in the preceding quotation speaks of a perforation "at the os uteri." Dr. Baillie, who completed the work, informs us (p. 77, see also Trans. of a Society, &c. Vol. II. p. 66. sqq.) that John Hunter, "in a case of very early conception, probably not more than two weeks," found the decidua, "upon opening the uterus, to be as fine at the beginning of the cervix as the retina, but without any hole in it there." "In more advanced pregnancy," he continues, "that part of the decidua which lines

nately not examined before the parts had lain in spirits and the decidua become contracted. Nor was it before this that I attempted to separate the decidua into layers. Should any member of the Society meet with an opportunity, it would be highly interesting to inquire into these points while the parts are recent *.

the inner surface of the uterus, and which will in the progress of the description be distinguished by the name of the decidua vera, seems to lose itself at the beginning of the cervix, and has evidently there an opening. The decidua which covers the external surface of the chorion, becomes gradually thinner as pregnancy advances, but has no opening in it at the cervix uteri or any where else."

* A bristle passed from the tubes into the uterus in Dr. Clarke's case (l. c. p. 221). But it might be replied that the bristle made itself an opening in the inner layer of the decidua. The openings in the decidua presented themselves spontaneously to my view on exposing its cavity. Yet it must be remembered, that Mr. Burns, in his Midwifery, says, the decidua passes in some cases a little way into the Fallopian tubes; and if the assertion is correct, and mine was one of these cases, there might be an appearance of aperture when no aperture existed.

ON

THE LIGAMENTS

OF THE

HUMAN OSSICULA AUDITUS.

By THOMAS WILLIAM CHEVALIER, Esq.

Read April 27, 1824.

IT is generally allowed at the present day, that all new facts, however apparently fruitless when recently discovered, should be recorded for the consideration of the many who are devoting their time and their talents to philosophical pursuits. And indeed it is only by those generous principles of conduct, whereby the mind of the world has been, at the earliest period, employed upon the observations of individuals, that we can possibly account for the recent advancement of science.

To a medical student of the present day, even the period of his own pupilage presents instances in which the progress of Pathology appears to have been the immediate result of perseverance in anatomical research; while the diseases which most resist the skill, and baffle the reasoning of the nosologist,—for example, those of the nerves, of the skin, of the ear, &c.—are precisely those concern-

ing which our anatomical knowledge has been hitherto most glaringly deficient.

My attention having been accidentally directed about six or seven years ago, to a minute investigation of the human organ of hearing, and having been unable to quit so interesting a subject, I began to consider whether the ossicula auditus might not, like other bones of which an accurate movement is required, be restrained and directed by a set of ligaments.

Though joints so minute must have very small ligaments, if any, I hoped that the accurate knowledge of them, might at least enable me to form a decided opinion upon the question, whether the mechanism contained in the cavity of the tympanum, adapts itself to the force alone, or also to the specific and individual characteristics of those impulses which it transmits.

The columella in the ears of birds is weakest in those that sing best. It bends under almost the slightest discernible impulse that can be communicated to the membrana tympani of these animals. If, for example, the membrana tympani of the thrush, or of the nightingale, were to receive the rude impulse of a touch, such a force would be immediately impressed upon the contents of the labyrinth as to injure them, were it not for the extreme flexibility of the columella. So that the pre-

servation of the delicate auditory nerve of these birds appears due to the weakness of the recipient or conductor of all they hear; and this defensive provision appears one important use of the sole ossiculum,—or rather of the sole cartilago auditus, that they possess. But one other purpose is evidently answered by the columella in the ears of birds, viz. the diminution of the area of the membrana tympani to that of the fenestra vestibuli.

In man, the incus does not communicate immediately with the stapes, but, as every one knows, through a double ball-and-socket joint; and the stapedius muscle is so placed, that it cannot fail, as often as it acts, to draw the latter bone from its usual position, under the arm of the incus; and to relieve the contents of the labyrinth from the direct impression of too violent a shock (Fig. 2. No. 12).

It is proper to remark, that very few of the ligaments of the body are so precisely similar, with respect to their forms and positions in different subjects, as to answer accurately the descriptions of Weitbretch; although his work upon those parts is the admiration of all who have once employed it in dissection, and can never be excelled. Accordingly, the ligaments of the ossicula auditus (which I have described in the explanation of the drawings as new to me) have not always precisely the same position or form. Several are of a quadrangular shape, but they have their angles in different indi-

viduals more or less acute. I have found the ligaments A, D, E, F, in some instances nearly parallel, in others, nearly perpendicular to the horizon. These four, however, as well as G and H are always so placed as to accomplish one uniform object, viz. the restriction of the movement of the head of the malleus, and therefore, also that of its manubrium, *to one direction*: and again, they are always so placed as to be put on the stretch by the elasticity of the drum of the ear; hence their effect, to prevent the membrana tympani from becoming less curved, and to oppose its relaxation, excepting when that purpose is accomplished by the musculus laxator tympani major.

To discover the ligaments of the human ossicula auditus, it is necessary to bear in mind that they are in most subjects extremely delicate, nearly transparent, and easily torn up with the periosteum lining the cavity of the tympanum. In making the preparations from which the accompanying drawings are taken * the cells of the petrous portion of the temporal bone were sawn away, an opening was thus made into the cavity of the tympanum, at the exterior and posterior part of its roof. The edges of this opening I carefully cut and pared away with the point of a knife†, carefully observ-

* These preparations with some others still to be made, will be deposited in the Hunterian Museum of the Royal College of Surgeons.

† The knife that I used has a large strong handle, into which

ing that my instrument should not remove even a point of membrane, or of bone, more than I intended, or more than I could accurately and certainly watch. Proceeding in this cautious manner there appears under the edge of the opening, the head of the malleus; or perhaps first, a very small but comparatively substantial ligament (B) uniting the head of the malleus to the roof of the tympanum. I have sometimes thought this was a capsular ligament; I cannot, however, satisfy myself that it contains any cavity. Manifestly it restricts the mobility of the head of the ossiculum, in all directions, to a certain extent; and may steady it also, both directly, and by obviating any vibration of its parts. Avoiding this suspensory ligament (for such it is in position, though not in office), and sparing the points of bone to which it is attached, the rest of the roof of the tympanum may be cut away; and there will thus be exposed a set of ligaments (A, D, E, F) together with the triangular body of the incus, completing, at the least four-sevenths of a circle, around the exterior of the neck of the malleus.

Now, taking care not to dislocate the stapes, the fenestra ovalis and all the interior wall of the

was screwed a short pointed blade of hard steel, with its sides meeting from a thick back, at a considerable angle, in the edge. With a single blade, for which the author is indebted to Mr. Stodart, he dissected six petrous bones, before the point was broken. His saw was a watch-spring saw.

tympanum may be with care and perseverance removed: and thus, in addition to that semicircular restraint upon the malleus already mentioned, as leaving it moveable in no other direction than outwards, there will be found two more ligaments (G and HK), whereof one is twofold.

Very commonly the short process of the malleus, at the obtuse angle between the manubrium and neck of this ossiculum, is as it were hitched upon the bony ring surrounding the membrana tympani: and hence, and more especially because at the same part of the malleus the long process goes off like an axle-tree, this appears to be the fulcrum upon which the malleus, as a lever, is moved.

In some instances, however (as in the sketch fig. 3.), this fulcrum or angle of the malleus is very far from being supported under its movements upon the auditory process or ring: the ossiculum being on the contrary suspended entirely within the circle of the membrane.

In either case, the angle of the external ossiculum, and for a short distance its manubrium, are supported by two very firm ligaments G and H: both of these ligaments being in a plane which is at an acute angle with that of the upper margin of the membrana tympani: both of these ligaments being so situated as to correspond in the restraint

they lay upon the malleus, with that of the ligaments around the exterior of its neck.

From the edge of that ligament which is posterior to the manubrium mallei, viz. from the edge of the ligament H, there proceeds, at an angle with its plane, a ligamentous band which is attached along the side of the articulating or long process of the incus: and sometimes fibres of this ligamentous band pass in a curve immediately from the manubrium mallei to the processus longus incudis. So that, whereas the ligaments A, D, E, F, G, H, confine the movement of the malleus, and therefore that of its manubrium to one single direction, the ligamentous band K prescribes this very same general direction, and probably the same extent, to the movement of the articulating or long process of the incus: that is, in effect, to the stapes itself. Also I have seen, in an ear of which the sense was unimpaired, the whole length of the articulating process of the incus, and the whole of the stapes, bound down to the interior wall of the cavity of the tympanum; viz. to that which is opposite to the membrana tympani.

As to the effects of the ligaments A, B, C, D, E, F, G, H, and K, considered in reference to the actions of the muscles of the malleus; the ligamentous attachments last described obviously suggest, in the first place, that the malleus and incus do not act as two distinct levers upon each other,

increasing the strength or extent of those sonorous vibrations which the drum of the ear receives. And, indeed, when we attentively examine the firm grasp of the incus upon the head of the malleus, and find the capsular ligament between these bones invariably the tightest in the body, it is difficult, if not impossible, to believe that these two ossicula act independently, or in such a way as must vary the tension of those ligamentous fibres that are found to unite, to no inconsiderable extent, their most moveable processes or arms (fig. 4. K *).

From the extremity of the short process, at the angle of the malleus, where it protrudes immediately below the uppermost part of the tube, or ring on which the membrana tympani is stretched; there proceeds a little pencil of fibres, which, diverging upwards, is inserted into the auditory process, or ring, immediately above. To this conical pencil of fibres Albinus restricts the name, laxator tympani; and if these fibres be muscular, they must tend to relax the membrana tympani, by reducing its curved surface nearer to a plane. Such an effect however will evidently be opposed by all the ligaments of the ossicula auditus: and hence this very short and conical muscle,—if such it be, has

* A patient of my father's, as also several others whose cases are upon record, could still hear with an ear from which he had lost all the ossicula auditus:—A fact which is scarcely credible if the little bones really tripled or quadrupled, as has been supposed, the *extent* of sonorous impulses or vibrations.

the remarkable office of steadying the malleus; or perhaps even that of holding it at rest, by restraining the only movement permitted by its ligaments.

The musculus externus mallei of Albinus, anterior mallei of Winslow, or laxator tympani of most anatomists is always, as far as I have observed, composed of very straightened and distinct fasciculi, and so tendinous and pale in its appearance as frequently to resemble rather a ligament than a muscle. It is known to be inserted into the malleus by the long process of this ossiculum, and so that the process might be considered as an osseous tendon belonging to the muscle in question.

If this muscle be pulled in the dead bone, the membrana tympani of the infant is indeed relaxed; but the malleus is not moved upon its fulcrum, for the osseous tendon of the muscle is in effect as an *axle-tree** to the ossiculum or lever. In the action mentioned the whole malleus is evidently moved in a direction downwards, forwards, and a little outwards; and this change of the place of the whole ossiculum in this direction, is not opposed by any of the ligaments. For example, the ligament H—though it would oppose the movement or displacement of the malleus forwards, is to be somewhat relaxed in a direction

* This expression, although inaccurate, appeared to me that which is most likely to be understood. (See figs. 3. and 4. No. 15.)

outwards and downwards, and it is therefore steadily moveable in the mean direction forwards, outwards, and downwards. And so of the ligaments A, B, D, E, F, or G. Clearly enough, the elasticity of the membrana tympani, is sufficient to relax it as far as it can be relaxed without being thrown into folds; that is, if unopposed: and when the musculus externus mallei, as it is called, is pulled in the infant's bone, the membrana tympani is thrown into folds, and rendered (as one would suppose) wholly incapable, for the time, of sonorous vibration. In general, as muscles are required to act for longer periods at once, they are more tendinous. During sleep not only are the eye-lids closed, but the cornea is elevated, as observed by Mr. Bell, in the Phil. Trans. for 1823, and sustained behind the upper palpebra by the inferior oblique muscle of the eye. Has then the musculus externus mallei an analogous use, diminishing the susceptibility of the ear for sounds during sleep? or does this muscle serve only to hold firm the malleus (as in the bones of most adults) against the extremity of that tubular interstice in which is lodged the osseous tendon of the musculus externus mallei? In many bones I have been able but thus to balance, as it were, the malleus, and to hold it steady against the extremity of the interstice when I have pulled the muscle; and by these means I have seemed to render it more apt to receive the sonorous vibration: there being no space left between the interstice and the malleus, and therefore no vi-

sible displacement of this ossiculum possible. (Figs. 3, 4. No. 15.) The tensor tympani is a considerable fleshy muscle, as large as a ripe oat; it draws the manubrium of the malleus directly inwards, relaxes every one of the ligaments which restrain this ossiculum, and allows its head, therefore, a slight primary movement inwards; at the same time it presses all the articulating surfaces of the ossicula into contact, each with its natural correspondent, and thus prepares the membrana tympani and the ossicula auditus for the reception and transmission of the most delicate sounds to the auditory nerve.

The tendon of this interesting muscle is, however, so closely united at the point where it is bent to a right angle, to the interior wall of the cavity of the tympanum, that it is prevented from moving to an injurious extent.

When the tensor tympani is in action, and the membrana tympani stretched inwards, we can easily imagine that it might be rendered yet more vibratory and elastic, with perfect safety, could it be endowed with a variable power, within itself, of opposing its own extension inwards, according to circumstances. And this is the fact; for physiology is indebted to the talents and research of Sir Everard Home, who has accurately, and, I think, satisfactorily proved that the membrana tympani is muscular.

With respect to the labyrinth of the human ear, I have made several observations, which I believe are not generally known, but which I wish to reconsider, from the difficulty I have found of late in obtaining a sufficient number of recent bones to dissect.

South Audley Street,
April 27th, 1824.

OBSERVATIONS

ON THE

SALIVA

DURING THE ACTION OF

MERCURY UPON THE SYSTEM.

By JOHN BOSTOCK, M.D. F.R.S. &c.

ONE OF THE VICE PRESIDENTS OF THE SOCIETY.

Read May 11, 1824.

IN some experiments which I performed, many years ago, on the chemical constitution of the saliva, I announced the existence of two animal substances in this fluid; one of them, nearly, if not altogether, similar to albumen in its coagulated state, and the other resembling the uncoagulable matter of the serosity of the blood. The first of these substances is characterized by being united to a considerable quantity of water, yet insoluble in this fluid, not coagulated by heat, nor precipitated by the various chemical re-agents which act upon liquid albumen, but affected by nitric acid and by potash in the same manner with albumen when coagulated. The other animal ingredient in saliva is characterized by its not being acted upon by the various substances which coagulate or precipi-

tate albumen, while it is precipitated by sub-acetate of lead, and by certain salts of tin and of silver *. This view of the nature of saliva I consider as being confirmed by many of my subsequent experiments in its more important parts, and, what is of still more consequence, it is sanctioned by the high authority of Berzelius, whose analysis may be considered as essentially coinciding with mine †.

An opportunity having occurred of examining the state of the saliva while the system was under the influence of a violent mercurial action, it appeared desirable to ascertain how far the secretion was altered in its chemical properties. The quantity of fluid discharged was supposed to be about two quarts in the day, and all the other effects of the medicine, both local and constitutional, were proportionably severe.

The saliva was of a light brown colour, and had a faint odour; although slightly opake, it was nearly homogeneous; by standing for twenty-four hours some small films and minute flakes subsided from it, by which its opacity was diminished; in this state it was made the subject of experiment. It was considerably adhesive, but only in a slight degree tenacious; it was easily transferred from one vessel to another in the form of drops, and, when

* Edin. Med. Journ. Vol. II. p. 43, 1806; also Med. Chir. Trans. Vol. IV. p. 76.

† Med. Chir. Trans. Vol. III. p. 246. and seq.

added to water, immediately diffused itself through the fluid, and was completely incorporated with, and apparently dissolved by it. It did not indicate either acid or alkaline properties by the appropriate tests. By slow evaporation, until the residuum had acquired a degree of brittleness, and a brownish yellow colour, the quantity of solid contents appeared to be about one-fiftieth of the weight of the whole fluid.

By being exposed for some time to the heat of boiling water, a degree of coagulation was produced; the fluid became considerably more opake and thicker in its consistence, but there was no precipitate or separation of any of the solid matter. It was submitted to the following tests:—solution of corrosive muriate of mercury produced a considerable precipitate, and, when the mixture was subjected to the heat of boiling water, a number of dense flakes separated from it, leaving the fluid transparent; after being passed through a filter, it had the aspect of pure water. By the addition of muriatic acid, the opacity of the saliva was considerably increased, and by applying heat, a coagulum was formed which gradually subsided, but it was less firm, and the separation was less complete than when corrosive muriate of mercury had been employed.

From these experiments we learn that the chemical constitution of the saliva was considerably

different from its natural state, and that this difference consisted in its containing a quantity of animal matter, possessing properties similar to those of albumen in its uncoagulated state, or as it exists in the serum of the blood.

Having ascertained this change in the nature of the animal matter in this saliva, which, it may be presumed, was owing to the action of mercury upon the system, it became an interesting object of inquiry to ascertain whether any mercury could be detected in it. The method which I employed for this purpose was to treat the evaporated residuum with nitric acid, by which means any mercury, if present, would be converted into the nitrate, and to test the fluid by the proto-muriate of tin. A preliminary experiment was made in order to learn how small a proportion of mercury might be detected by this process. A given quantity of mercury was converted into the nitrate; I took as much of this nitrate as contained one grain of mercury; this was successively diffused through different proportions of water, until it at length composed no more than $\frac{1}{10000}$ of the mixture, when I found that the proto-muriate of tin produced a grey cloud, which was very distinctly visible. The same process was adopted with respect to the evaporated residuum of the saliva, but it did not afford the least indication of the presence of mercury; the experiment was repeated more than once without effect, and I may remark that I obtained the same results in

some experiments of a similar kind, which were performed several years ago.

After an interval of sixteen days I procured from the same individual a second portion of saliva, the use of mercury had, in the mean time, been omitted; and although the quantity of fluid discharged was still considerable, it was much less than before. The sensible qualities of the fluid were now entirely changed: it was considerably opake, and had a number of mucilaginous flakes floating in it, which were insoluble in water, and not easily miscible with it; it was so viscid as to be capable of being drawn into threads, while, on the contrary, it did not admit of being dropped. Its solid contents, as ascertained by careful evaporation, were found to be considerably more in quantity than in the former case; it slightly reddened litmus paper, indicating the presence of an uncombined acid.

When this saliva was submitted to the temperature of boiling water it was rendered more opake, but no proper coagulation took place; after standing for forty-eight hours, there was a separation of a more dense substance from the remainder of the fluid, but in an imperfect degree only. The corrosive muriate of mercury and muriatic acid were respectively added to portions of the saliva; in each case the fluid was rendered more opake, but no distinct coagulation was produced, and although the

effect was increased by applying heat, still the separation was not complete. By the addition of the sub-acetate of lead, a very copious precipitate was thrown down, consisting partly of large flakes, while the fluid was left quite transparent, and, as it appeared, deprived of all the animal impregnation. This saliva was examined as the former had been, for the purpose of discovering whether it contained any mercury, and it is scarcely necessary to state that the search was unsuccessful*.

The conclusions which we may draw from the above experiments, on the nature of the saliva discharged while the system is affected by the action of mercury, are sufficiently remarkable to arrest our attention. We learn from them, in the first place, that no portion of the mercury is actu-

* The improved state of medicine, with respect to the administration of mercury, seldom affords us an opportunity of observing so violent an operation of the medicine as took place in the above case, but I found the same kind of change, although in a less degree, in the saliva of persons under the moderate influence of this medicine. In a specimen which I procured from the wards of Guy's hospital, the saliva had nearly lost its tenacity, was readily soluble in water, and after being passed through a filter, was precipitated by corrosive muriate of mercury, and was rendered partially opake by heat. In another specimen the same effects were observable, but here the fluid retained a degree of tenacity, and was only in part capable of being passed through a filter, while a third specimen appeared to be little changed from its healthy state, except in its containing a greater proportion of water. I shall not omit any opportunity which occurs of examining the saliva in the state of more severe mercurial action.

ally present in the fluid, from which it follows that the effect of this medicine, although so remarkably manifested upon the salivary glands, must be produced through the medium of the system generally, and hence we may presume that all the organs destined for the secretion of mucus will undergo the same change. This change would appear to consist essentially in the conversion of the animal matter, from the state of a mucous to that of a serous, or rather of an albuminous fluid.

Now, although we are not sufficiently acquainted with the theory of secretion to know what are the minute operations which enable the capillary vessels connected with the glands to produce their appropriate fluids, yet we may form some idea of the relation which they bear to each other, as far, at least, as regards the greater or less complexity of the process. All those fluids, for example, which proceed from what are termed serous membranes, appear to differ from the serum of the blood solely in the proportion of albumen which they contain, and we may therefore conceive that they are generated by a process resembling transudation, and that this is, in a great measure, of a mechanical nature. In the secretions, however, which are discharged from the mucous surfaces we find a change effected which is of a chemical nature, where a new substance is generated, which did not previously exist in the blood. In what way the vital functions act, so as to convert albumen into the muci-

laginous matter which forms the basis of saliva is at present beyond our power to ascertain, but whatever it be, we find that in the case before us, the operation of mercury upon these parts is to counteract the ordinary secreting process, and to reduce the action of the glands to that of mere transudation.

Were we disposed to speculate upon this subject we might inquire, whether an increase in the diameter of the vessels, in consequence of an increased afflux of fluids to them, or whether the more rapid transmission of their contents, without an increase in the capacity of the vessels, would be adequate to explain the effect. But I think the present state of our knowledge on the subject is much too imperfect to enable us to arrive at any degree of certainty upon these topics. Nor is it in our power to make any considerable advance in the application to the facts to pathology, but still we may be allowed to state some probable deductions from them, which may perhaps lead to new facts, and these in their turn to more important conclusions.

As we find that at least one operation of mercury is to convert a mucous into a serous secretion, the following queries suggest themselves; whether we may not conceive that the action of this remedy, in the cure of glandular obstructions, consists simply in producing this change in the

nature of the secretion? Whether, even in the removal of the diseases of surfaces, mercury may not operate upon the same principle, by counteracting the effect of specific secretions, and reducing them to the mere transudation of a serous fluid? Whether by examining the effects of the remedy upon the chemical nature of the mucous secretions, we may not be furnished with a more accurate test of its constitutional action, or at least of the extent of this action, than we at present possess in the mere quantity of saliva that is discharged?

Before I conclude this paper, I may remark that I had an opportunity, some time ago, of examining the fluid discharged from the internal surface of the stomach in two cases where this organ exhibited the appearance of acute inflammation. In one there was reason to suppose that death had been occasioned by arsenic, although none could be detected; in the other the patient died in a few hours after swallowing a large quantity of ardent spirits. In both these instances the secretion from the mucous membrane of the stomach appeared to be much more albuminous, or serous, than in its natural state.

It is well known that there are certain morbid conditions of the urine, in which it is found to contain a portion of albumen, cognizable by the usual tests, and it is generally understood to be an

indication of an inflammatory action of the sanguiferous system. I would not venture to generalize so far as to conclude, that the action of mercury on the salivary glands, the inflammation of the mucous membrane of the stomach, and the peculiar condition of the system producing albuminous urine, are all to be referred to the same specific action, but the coincidence is noticed as one that may deserve further investigation.

As an appendix to the above paper, I shall beg leave to lay before the Society an examination which I lately made of the mucus expectorated by a patient suffering under a severe catarrhal affection. I am aware, that a part at least of this fluid proceeded from the glands of the lungs, whereas the saliva, in the former case, may be supposed to have been principally discharged from the salivary glands, but I am of opinion that all the mucous secretions resemble each other in their more essential properties, so as to admit of a comparison being made between them in their various morbid states. In the following case it will appear that the saliva had experienced no very important change in its chemical constitution, but that the quantity of the substance which may be considered as its specific ingredient (and which I regard as nearly resembling coagulated albumen), was much increased in quantity, while there was no tendency

to that alteration in its nature which appears to be produced by mercurial action.

A patient who was suffering under a severe catarrhal cough, but not attended with inflammation, expectorated a large quantity of unusually thick mucus, probably not less than a pint in 24 hours. A portion of this fluid was obtained for examination. It was extremely tenacious, so as to be capable of being drawn into very long threads, and in attempting to pour it from one vessel to another, the whole of it passed over at once. It was semi-opake, and the greater part of it of a uniform consistence, but there were certain portions which were more opake than the rest, and remained suspended in the other part of the fluid. There was a great quantity of air-bubbles attached to its upper surface, and the froth remained for several days without any apparent diminution. The most delicate tests did not indicate the slightest tendency either to acid or alkali, and it continued exposed to the air for three weeks without experiencing any change. Although its consistence appeared to be at least as dense as the white of an egg, it was found to contain a much smaller quantity of solid contents. When carefully evaporated by a gentle heat, until it was just beginning to be charred, but while it was still capable of being mixed with water, and of regaining its former consistence, a residuum of about $\frac{1}{50}$ was obtained.

This had the appearance of a hard, brittle, semi-transparent substance, and did not appear to undergo any change by exposure to the air. When the heat was continued, the residuum was converted into a brown mass, emitting a specific odour, and slightly attracting moisture from the atmosphere. A red heat converted it into a hard spongy charcoal, which was difficult to incinerate. When exposed to a bright red heat it was consumed, leaving a white substance which appeared to undergo a partial fusion, attended with decrepitation. A white powder remained which was found to be chiefly muriate of soda.

A portion of the mucus had four parts of water added to it, and was suffered to remain at rest. After an interval of three days the mucus continued floating in the water, apparently without having mixed itself with it. The whole was then thrown upon a paper filter. A quantity of fluid, that was perfectly transparent and only slightly viscid (A) passed through, while the mucus remained on the filter apparently little changed. Another similar mixture was strongly agitated; the greatest part of the mucus appeared to be thereby uniformly diffused through the water, but there were masses of films or threads suspended in it, which seemed incapable of being incorporated with the water. The whole fluid was very viscid and tenacious, and the mucus showed no tendency to separate or subside from the water.

A portion of the mucus was exposed for some time to the boiling temperature; there was little immediate effect produced; but after some time the opake masses became more dense and gradually subsided, while the fluid generally was rendered rather more opake. In twenty-four hours a small quantity of a white precipitate subsided from it, and it was now considerably less tenacious, so as to be capable of being transferred in divided portions from one vessel to another, but it was still very viscid, and frothed much upon agitation (B). The solution of the corrosive muriate of mercury had no effect upon it at the temperature of the atmosphere; by heat it was rendered rather more opake, but no precipitate or coagulum was formed.

Two equal portions of the mucus had the solution of the corrosive muriate of mercury, and the muriate of tin respectively added to them; no immediate effect was produced, nor was there any very considerable change in twenty-four hours. They were then exposed for some time to the temperature of boiling water, when, as in the former cases, the opake parts were rendered more dense, and slowly subsided, while, after a second interval of twenty-four hours, the whole of the two fluids became considerably less tenacious, and large flocculent masses were formed, which slowly subsided; this was more especially the case with the fluid to which the corrosive muriate of mercury had been added.

When nitric acid was added to the mucus, without the action of heat, a white precipitate was gradually thrown down in small quantity; and when heat was applied, the precipitate was increased and rendered more dense. The fluid acquired a light yellow colour, and a very decided waxy, or rather adipocerous odour. When the acid was supersaturated with ammonia, the colour was converted to a deep yellow, but no precipitate was thrown down. The precipitate mentioned above, being separated by a filter, was of a straw colour, somewhat fusible, and inflammable, and appeared to be of a waxy or adipocerous nature. A portion of the mucus was evaporated to dryness, and was then heated with nitric acid. This dissolved it, with the disengagement of gas, while the fluid acquired the straw colour and adipocerous odour. By the addition of ammonia its colour was much deepened, and a white precipitate was thrown down.

To a portion of the filtered fluid (A) acetate of lead was added, and immediately a copious white precipitate was deposited, which, after remaining at rest for twenty-four hours, separated into two portions, the lower having the appearance of small dense white particles, the upper more bulky, less white, and flocculent. Another portion of the fluid (A) was slowly evaporated, and it left a residuum, which was obviously composed, partly of a film of animal matter, and partly of a saline substance, in the form of irregular and indistinct crystals.

To a portion of the entire mucus, after having been agitated with four parts of water, the acetate of lead was added. A very copious precipitate was thrown down, which, as in the former case, consisted distinctly of two portions, a more dense one below, and a more flocculent one above; the fluid was left completely limpid and transparent. The muriate of tin and the nitrate of silver had both of them the effect of gradually throwing down precipitates from the mucus, which, in the latter case, were of a dark brown colour, while the fluid was rendered transparent and much less tenacious.

Upper Bedford Place,
April 24, 1824.

CASE

OF

FUNGUS HÆMATODES

OF THE

BRAIN.

By JOHN HUNTER, Esq. Jun.

MEMBER OF THE ROYAL COLLEGE OF SURGEONS.

COMMUNICATED

By Mr. GREEN.

Read June 23rd, 1824.

MISS M. A. was afflicted with severe head-ache in the early part of 1820, being then in her seventeenth year. She was of a delicate frame, light hair and eyes, fair complexion, and of a mild and cheerful disposition. She had previously enjoyed good health, menstruated regularly, had not received any blow or injury, and knew of no cause to which the complaint could be assigned. Common means afforded relief, and she went down into Cheshire for four months during the summer, where she was in the habit of taking daily exercise, and on one occasion walked ten miles without much inconvenience, but was never entirely free from head-ache. Shortly after her return to town the pain again became very distressing, and she

again derived benefit from the medicines administered, and the application of a blister to the neck. In January 1821, in consequence of a severe relapse of pain, leeches were applied to the forehead, after which she had a long interval of comparative ease. In February she was at a ball, danced for several hours, and appeared to enjoy herself much; nor did she apply for further advice, till the 30th of May following. Her symptoms were then much aggravated, and she became rapidly worse. The pain of the head assumed a more serious character. It was usually referred to the right temple, and she experienced a regular exacerbation every morning, to such a degree, that she would roll about the bed in agony for an hour or two, after which the pain gradually subsided, and continued more tolerable during the day. In addition to this, she was affected with vertigo, occasional syncope, great dread of imaginary objects, a state of high nervous irritation, dullness of hearing, and indistinct vision. She became short sighted; objects appeared larger than natural, and at times she was totally blind for several seconds. Along with these symptoms she had quickness of pulse, heat of skin, violent pain in the stomach, sickness and vomiting. Very severe metastatic pains, unattended with any external appearance of inflammation, attacked in succession various parts of the body, at one time the throat, occasioning extreme difficulty of deglutition, at another the chest, impeding the respiration, at another different parts of the spine (more particularly towards the neck),

the knees, the ancles, and the wrists. Blisters, cold applications to the head, mercury in small doses, though not to the extent of salivation, and a variety of other means were tried, but with little or no relief. Her health declined fast, and she became much emaciated from the constant vomiting.

On the 31st of August, 1821, she was attacked, while in bed, with a fit of strong convulsions. The whole of the body was thrown into violent action, attended with strabismus and screaming. This lasted about half an hour, and when the struggling ceased she was left in a state of stupor, from which, however, she recovered during the night. On my visit the following day, I found her condition materially altered for the worse. She had now lost all power over the body, and could not raise herself or even turn from side to side in the bed; her legs and arms she could move, but with less freedom; her sight, which though imperfect had hitherto enabled her to discern objects, was now so far lost that she could only perceive the difference between light and darkness when the change was sudden. The pupils were much dilated and slightly affected by the light. Her deafness also was greatly increased, and she could with difficulty catch any sound. The failure in the sight and hearing occurred first on the left side, being opposite to that in which the pain was originally fixed. The bowels were obstinately costive; the vomiting and pain of the stomach continued; pain of the head intense;

pulse quick, respiration hurried, skin hot and dry, sleep tranquil and without stertor. In the course of a few days she had a repetition of the same kind of fit; after which they returned with more or less frequency and severity, till within a short period of her death, generally influenced, however, by the state of the alimentary canal. Sometimes she had five or six in a day, and occasionally she would pass several days without any fit. They usually came on without warning, but sometimes they appeared to be produced by slight exertion. Besides these general convulsive attacks, she was subject to spasmodic twitchings, and startings of different parts of the body. Her sight and hearing were soon lost altogether; the smell was also entirely lost, and the taste, if any remained, was very imperfect. She expressed a desire for particular articles of food, but always complained of their being insipid, and could seldom tell what she was eating.

Being deprived of all the organs of sense connected with the brain, the only mode of communication that could be devised, was the common method of talking with the fingers, the person with whom she was conversing indicating each letter upon her fingers. She was soon able to distinguish, by the feel, every person with whom she was in the habit of talking, and acquired considerable facility in this way of conversing, guessing the words before they were half spelt. She would thus keep one or other of her attendants constantly

employed when awake. She was anxious to amuse herself with some kind of manual occupation, but her arms were so feeble that she could not bear the fatigue of any that were tried. Her intellect was unimpaired, except when under the influence of the fits. She appeared to be aware of her hopeless condition, and desired that her head might be opened after her death. She evinced great patience under her sufferings, and was even cheerful when the pain was moderate; she was seldom however, when awake, free from intense pain in the head, of a lancinating or throbbing kind, not confined to any particular part. The pain at the upper and lower part of the spine, the sensation of extreme coldness down the back, pain in the right and afterwards in the left breast, were also at times exceedingly distressing. The face was often swelled, apparently œdematous, though at other times quite shrunk. The cheeks were subject to partial flushings; the eyes retained their lustre; the pupils were fully dilated, and quite insensible to light. The heat of the skin was frequently very oppressive, and the itching at times intolerable. She rarely complained of cold, excepting down the spine. The tongue was occasionally furred, but generally clean; no thirst. The appetite, after the vomiting ceased, became almost insatiable, and she recovered flesh.

Subsequently she had repeated attacks of bilious vomiting, reducing her each time to a state of excessive debility, from which she as often rallied

in a surprising manner. The vomiting was apparently produced by the action of the stomach alone, unassisted by the abdominal muscles. The bowels were obstinately torpid, seldom acting without the aid of cathartics. She once went fourteen days without an evacuation. Her symptoms were invariably aggravated when the bowels were long confined. The urine was passed involuntarily during the fits, but was at other times under the influence of the will. The catamenia had not appeared since she had been confined to her bed; respiration natural and easy; speech unaltered; voice clear and distinct; pulse varying from 80 to 100, small, and generally weak; sleep very easy and undisturbed, except by her crying out to be turned, after which she would doze off again directly. She could lie on her back, or on either side, but was unable to rest in the same position above half an hour at a time, so that she required some person constantly in attendance to turn her, and if it was not done as soon as asked for, she frequently went into a fit. She never recovered the power of her body, nor could she move her head in the least degree, but her sensation was quite perfect. Several attempts were made to raise her gradually in the bed, but they always produced considerable pain, and, if persisted in, brought on a fit. The medicines exhibited were merely intended to relieve her sufferings, except that an attempt was made to affect the system with mercury; but the fits increased so much during its use, that her mother requested it might be discontinued.

The above symptoms continued with more or less urgency till February 1823, when her powers began to fail altogether, the stomach rejecting every kind of food. No evacuation could be procured from the bowels, without the aid of injections; the whole muscular system seemed to lose its tone; the limbs were drawn into a semiflexed position, and she had scarcely strength to move them; the lips were half closed, the mouth full of aphthous ulcerations, and the teeth covered with sordes; the features were distorted; she slept with her eyelids half open; the eyes became dim; inflammation came on in the left eye, which proceeded to ulceration and opacity of the cornea. She expressed no pain, and was not even aware that the eye was affected. The urine and fæces were passed involuntarily. She could not swallow any food unless it was reduced to a liquid form, and then only with difficulty. She had a troublesome cough, which, from her extreme debility, frequently threatened suffocation; it seemed to be occasioned by mucus irritating the upper part of the larynx. Pain in the head continued to distress her, but the fits were less frequent, and appeared incapable of producing the same convulsive action, for want of power in the muscles; and she did not require to be turned so often. Her faculties also declined; she talked very little, and only of her complaints. Her pulse was so feeble as to be scarcely perceptible. She still breathed freely, and slept much, and remarkably easy. The composed sleep which she enjoyed from the com-

mencement of the disorder, had always proved a source of great consolation to her friends.

In September, a slight diarrhœa came on: she could then scarcely take any sustenance, and had become so much emaciated that the skin was excoriated in several places, from the pressure of the bones. She died, apparently without much suffering, in a state of complete exhaustion, on the 5th of October, 1823, having lingered more than two years from the first attack of convulsions, and nearly four years from the commencement of the head-ache.

This interesting case was attended in the early part by Drs. Babington and Birkbeck; was seen repeatedly during its progress by Mr. Cartwright, Surgeon to the Middlesex Hospital; once by Mr. Green, of St. Thomas's Hospital; and by one or two other medical gentlemen, besides my father and myself, who visited her regularly from the first of her illness.

I inspected the body the day after her decease, in the presence of Mr. Cartwright and Mr. Yarnold. The following appearances were remarked.

The scalp was slightly œdematous. The bones of the cranium extraordinarily thin, and several short spicula projected inwards, from the posterior part of either parietal bone. The membranes covering the brain were free from disease; the sub-

stance of the cerebrum rather softer than usual; from eight to ten ounces of fluid in the ventricles; the membrane lining the ventricles of a dingy yellow colour. The thalami nervorum opticorum were somewhat enlarged, irregular on their surface, and entirely converted into the *fungous* disease. A longitudinal section through one of the thalami presented exactly the appearance of a portion of coagulated blood. The corpora striata were not affected, but the disease extended into the adjacent parts of the cerebrum and cerebellum below, and also to the lower and posterior edge of the falx major. The optic nerves were of a darker colour than usual, but did not appear to be altered in texture. The other cerebral nerves presented no deviation from their natural structure. The spinal marrow, as far as could be traced through the foramen magnum, was perfectly healthy. There were several sharp ridges of bone at the basis of the cranium, and the irregularities were all very strongly marked.

The viscera of the thorax and abdomen were carefully examined throughout, but no diseased appearance was found, except a number of small biliary concretions about the consistence of wax, and a quantity of inspissated bile lodged in the gall bladder. The diseased portion of brain, was presented to Mr. Green, and is now in the museum of St. Thomas's Hospital.

83, *Mincing Lane.*

ON A

NEW PREPARATION

OF

CROTON TIGLIUM.

By the late JOHN POPE, Esq.

COMMUNICATED BY MR. EARLE.

Read June 23d, 1824.

IT is now some years since the expressed oil of croton tiglium was introduced into Europe as a medicine, and during this time its effects have undergone considerable investigation, both in this country and on the continent, the general result of which has been so far satisfactory as to obtain for it a place in the Materia Medica of the London College of Physicians. The article commonly in use is known by the name of Croton Oil, and is a highly drastic purgative, hot and pungent on being swallowed, and producing great and painful irritation on the mouth and fauces, which continues sometimes for many hours. It is generally admitted to be a medicine of the greatest efficacy, but considerable difference of opinion exists as to its specific action, and the precise cases in which it may be most advantageously employed. This

uncertainty principally arises from an improper mode of preparing the oil, which has hitherto been by expressing the entire seeds; but from numerous experiments I have found that the husk or shell of the seed, and more especially the epidermis or coat more immediately enveloping the kernel, contain that acrid irritating property, which forms the principal objection to the use of the tiglium oil, while from the medulla alone of the seed a perfectly safe and efficacious purgative may be obtained.

The medulla is universally employed in India in SUBSTANCE, as the ordinary purgative of the natives, and their mode of employing it is by carefully separating the husk and epidermis, and also by taking out the eye of the seed, or, more correctly, the rudiments of the seminal leaves, in all of which the acrid principle intensely resides. The medulla thus prepared is then mixed with a native preparation of antimony, and formed into pills; one seed, weighing from two to three grains, being sufficient for as many doses. This mode of employing the seed in India was detailed to me by a medical friend who was nearly twenty years resident there; and as it agrees with the results of my own examination, I have been induced to subject the seeds to a similar preparation, and have by that means obtained an oil, which I submit with some confidence to the medical world. The dose is from one to two drops, either formed into

pills, or diffused by means of egg or mucilage in a small quantity of fluid.

The best mode, however, of exhibiting the oil is by dissolving it first in a little alcohol, in the proportion of about one drop to half a drachm, in which state it may be more easily diffused in some simple fluid; for by acting on an extended surface, the purgative effect is more speedily insured. This fact has been fully established by the successful exhibition of the *alcoholic tincture* of the seeds. The particulars of a case have been obligingly furnished me by Mr. Tucker, in which a dose of this tincture produced a speedy action of the bowels, after a violent constipation of nine days, which had resisted every other means. The following was the form in which it was administered.

Take of the

Alcoholic Tincture of Tiglium Seeds, 25 minims,
Compound Powder of Tragacanth, one drachm,
Distilled Water, one ounce;
Mix, and form into a draught.

The draught acted in about an hour and a half, unattended by vomiting or any unpleasant symptoms.

The alcoholic tincture has been successfully employed in various other instances, particularly in the case of children. It affords great fa-

cilities of giving this medicine in small doses. The following is the form for its preparation.

Take of the

Seeds of Croton Tiglium carefully deprived of the husk and epidermis, and bruised, two ounces,
Alcohol (sp. grav. 836°.) twelve ounces;

Digest for six days, and strain. The dose of the filtered tincture for an adult is about 20 minims.

The oil of tiglium is soluble in æther, and in oil of turpentine. It is only partially soluble in alcohol, which dissolves rather more than two thirds of it, but takes up the whole of the purgative principle, the residuum exerting little or no action on the intestinal canal.

The acrid property of the epidermis is of a very peculiar nature. It is scarcely at all acted upon by alcohol or æther. In the latter menstruum, after it had been digested for some weeks, not more than one part in thirty was taken up, and very little more by alcohol. It gives out its acrimony, however, readily to oil of turpentine, and also to olive oil, especially if assisted by heat. On applying a small quantity of these solutions to the tongue, they appear at first to be almost tasteless, but after some minutes a burning heat is felt in the

mouth and fauces, which continues with increasing violence for many hours, producing in some instances nausea and vomiting. By lightly rubbing on the skin a little of the solution of the epidermis in oil of turpentine, after it has been concentrated by evaporation, a pustular eruption is produced similar to that caused by the use of tartrate of antimony ointment. When given to animals in powder, a few grains commonly produce vomiting, followed by purging, and accompanied by great heat and itching of the rectum. It is found, that even in weighing or bruising the seeds, the dust which is dispersed in the atmosphere occasions violent irritation of the mucous membrane of the nose. Its inhalation should therefore be carefully avoided.

Five or six grains of the kernel of the seed introduced into the stomach of a dog invariably produces abundant watery evacuations in one or two hours, and oftener in a much shorter time. The same effects are produced if one or two drops of the oil be applied to the tongue, or injected into the rectum. It does not usually cause vomiting unless in excessive doses. In several cases the animals were killed after the exhibition of the oil in doses sufficient to produce the purgative effect, but no traces of inflammation presented themselves.

With regard to the effects of the epidermis alone, I regret that the experiments I have hitherto made

have not been conclusive, owing to the readiness with which it was uniformly rejected from the stomach. Future attempts, however, may probably be more successful. Some interesting cases of dissection after the exhibition of croton tiglium, accompanied with a variety of remarks on the use of this medicine, have lately been published in Paris, by W. E. E. Cornwell, M.D., to whose paper I would beg to refer all who are interested in this subject.

It is a fact deserving of mention as of some importance in a pathological view, that croton tiglium is admitted, after ample investigation, by several veterinary surgeons of eminence, to be the best known purgative for horses, as it acts with uniform effect, and without griping and irritation, which are the usual attendants on the use of aloetic purgatives. I am much indebted to Mr. John Field for the facilities which he has afforded me in prosecuting this part of the inquiry, and for the great attention it has received at his hands.

I beg in conclusion to say, that it is my intention to follow up the investigation of this subject, with a view of obtaining the peculiar acrid principle of tiglium in a detached form; and if my attempts should be successful, I shall have the honour of laying the results before the Medical Profession.

96, *Oxford Street*,
May 6th, 1824.

REMARKS

ON

THE DIAGNOSIS,

AND ON

THE INVERSION OF THE FOOT,

IN

FRACTURE OF THE NECK

AND UPPER PART OF THE THIGH BONE.

By GEORGE JAMES GUTHRIE, Esq.

LECTURER ON SURGERY, ETC. ETC. ETC.

Read June 9, 1824.

THE observations which have been lately published by Sir Astley Cooper on fractures and on dislocations, and the discussions which they have given rise to, have had the effect of drawing the attention of the Profession more closely to a subject which has always been allowed to be attended with considerable difficulty; and whilst they have established certain principles and modes of practice, highly beneficial to mankind, have also shewn that the subject is by no means exhausted, neither has it received all the elucidation of which it is at present susceptible.

The depth at which the head and neck of the femur are situated and the manner in which they are surrounded by the soft parts, render an examination of them sometimes difficult. The fact of displacement therefore, together with its particular nature, is often more satisfactorily ascertained by certain attendant and even distant signs, than by the closest investigation of the part itself, the immediate derangement of which cannot, at all times, be perceived, more particularly if the sufferer be large and fat.

The principal difficulty hitherto supposed to exist, is that of distinguishing between dislocation of the head, and fracture of the neck of the femur. This has been presumed to be overcome by certain signs diagnostic of each of these kinds of injury: but, as they are common to both, they require to be considered collectively, rather than separately, in order to enable the surgeon to arrive at a legitimate conclusion.

The dislocations hitherto demonstrated, which may be mistaken for fracture, are of two kinds:

1. Upwards and backwards, on the dorsum of the ilium.

2. Backwards, into the ischiatic notch.

In the first kind of dislocation, or upwards and

backwards, the head of the femur is removed from the acetabulum, drawn upwards, and turned backwards on the dorsum ilii. The trochanter must, consequently, be forwards, and nearer to the anterior superior spinous process of the ilium. The limb is necessarily shortened, from one inch and a half to two inches and a half. The knee is turned inwards, and a little advanced, and the great toe rests on the instep of the other foot. The head of the bone is firmly fixed in its new situation, the limb cannot be drawn outwards, or fully separated from the other, although it admits of motion inwards, when the head of the bone may be felt in most cases moving on the dorsum ilii. The trochanter major is less prominent, the hip will, consequently, be flatter, and its rotundity will be diminished. There will generally be a greater degree of distortion than is apparent in any other kind of injury.

In the second kind of dislocation, or backwards into the ischiatic notch*, the limb is from about half an inch to one inch shorter than the other, but generally not more than half an inch. The trochanter major is behind its usual place, but is still remaining nearly at right angles with the ilium, with a slight inclination towards the acetabulum. The head of the bone is so buried in the ischiatic notch that it cannot be distinctly felt, except in thin persons, and then only by rolling

* Sir A. Cooper on Dislocations, &c. page 66. 3d edition.

the thigh-bone forwards so far as the comparatively fixed state of the limb will allow. The knee and foot are turned inwards, but less than in the dislocation upwards, and the toe rests against the ball of the great toe of the other foot. When the patient is standing, the toe touches the ground, but the heel does not quite reach it. The knee is not so much advanced as in the dislocation upwards, but is still brought a little more forwards than the other, and is slightly bent. The limb is so fixed that flexion and rotation are, in a great degree, prevented.

There is a third kind of dislocation mentioned, but which has not been demonstrated. The dislocation is upwards, but, contrary to what takes place in the first species, the head of the bone is turned forwards, the trochanter backwards. When such an accident occurs, the knee and great toe must be very much turned outwards, the limb shortened from an inch and a half to two inches and a half, and fixed so as not to admit of rotation inwards. The head of the bone will be distinguishable on the dorsum of the ilium, the trochanter will be deeply buried, and turned backwards. The hip must be greatly flattened, constituting, altogether, a diagnosis not easily mistaken, whenever such a case occurs.

Dislocation may take place at any age, but it is a rare occurrence in old persons.

Fractures of the neck of the femur may be confounded with the dislocation of the os femoris upon the dorsum ilii, and with that into the ischiatic notch, as in both these luxations the limb is shorter. It is said to be distinguished from them by the eversion of the foot, and by the mobility of the limb in fracture. The eversion of the foot is, however, by no means a constant or diagnostic sign of this injury, and it is admitted by the best authorities, that the foot is sometimes inverted, although it is considered as an extremely rare occurrence. Even where the eversion does take place, some hours often elapse before it assumes its most decisive character, as the muscles require time to enable them to assume a determined contraction. The inversion of the foot, in fracture, was first noticed by Paré, and his remark was confirmed by Petit, but subsequently disputed by Louis, who considered it either as an error on the part of the author, or of his copier. Dessault, however, met with it so often, as to compute the frequency of its occurrence to be as one to four; an assertion which may be considered very extraordinary when compared with that of Boyer, who says, he never saw an instance of the kind in the very great number of fractures which came under his observation, and concludes his remarks with the following observation: "We are not acquainted with a sufficient number of instances, in which the foot turned inwards, to enable us to admit that this even happens

occasionally. We have never seen it, and it is difficult to conceive how it can take place. Time, further observation, and, above all, anatomical inspection, can alone furnish the solution of this problem." *

I had always conceived, with others, and taught in my lectures, that when the foot was turned in, or neither in nor out, the fracture must have occurred in the cervix of the bone, near the head, so that the portion attached to the trochanter passed behind that remaining with the head of the bone, and, in this manner, caused the turning inwards of the great toe; or that the capsular ligament being torn, it passed backwards behind the acetabulum, giving rise to the same appearance. In either of these hypothetical cases, the inversion of the toe, or point of the foot, should not have continued after the limb had been restored to its proper length; a result which, in the cases I have actually seen, did not follow; proving, therefore, that the opinions entertained of the nature of these cases, were unfounded. The only dissection of an injury I am acquainted with, made previously to the one presently to be noticed, in which the toe turned inwards, is in the possession of Mr. Langstaff; but in that case the great toe was, in the first instance, everted, and subsequently turned inwards, when

* Boyer. Traité des Maladies Chirurgicales. Tome iii. p. 268. Paris, 1818.

the patient began to use the limb. The preparation shews the fracture to have been within the capsular ligament, close to the head of the bone, and gives a decided refutation to the opinion of the length of the broken portion attached to the trochanter being the cause of the inversion, inasmuch as this part has been removed by absorption. The point of the foot was everted whilst it retained its proper length, and only became inverted by a wise provision of nature to assist progression, after it had begun to be shortened. This circumstance receives great illustration in the person of Henry West, a boy from whom Mr. White, of the Westminster Hospital, removed the head, neck, and part of the trochanter of the left thigh-bone, in consequence of scrofulous disease of the hip-joint attended by abscess. He recovered after the removal of the bone. The thigh is three inches and a half shorter than the other, and the toes turn inwards, not only in walking, but when he lies on his back in a quiescent posture, or prepared for sleep.

In January, 1823, I visited a lady who, seven days previously, had slipped at the entrance of her house, and fallen on the left hip. She suffered great pain in the part, at the inside of the thigh, and in the course of the sciatic nerve. She was lying across her bed with the affected limb supported by a stool, the toe and foot being very much everted, and the heel resting below the ancle of the opposite side. On placing her in the extended posi-

tion, the limb seemed little shorter than the other, was moveable in every direction as far as it could be tried, on account of the extreme pain it occasioned. The upper part of the thigh or hip was swelled, and a derangement of the trochanter could be distinguished, but the nature of it could not be distinctly ascertained; a crepitus was not discoverable. The injury was declared to be a fracture exterior to the capsular ligament, but, after the first day of treatment, the great toe turned inwards, resting against the toe of the opposite side, and continued to do so for several weeks, giving rise to a great deal of annoyance on my part, and several subsequent examinations, from the fear of having misunderstood what appeared at first to be a well-marked case. This lady can now, after an interval of eighteen months, walk with the help of two sticks, the limb is little shortened, and the foot is in its natural position.

Sarah Gibson, aged 90, fell, on the 9th of January, from a high stool on which she was sitting, upon the left hip, and being a heavy woman suffered considerable injury. I saw her two days afterwards with Mr. Dillon of Judd Street, and found the marks of a considerable contusion having been sustained by the part, which was very painful and swelled. The limb was rather more than half an inch shorter than the other, and the great toe turned inwards, as in the preceding case, in a manner sufficiently marked, although not quite so

decidedly as in a case of dislocation. The limb was moveable in every direction, but these motions were attended by considerable pain, and it could be easily extended to the same length as the other. No crepitus could be distinguished. The patient died on the 22d February, forty-four days after the accident, and on dissection a fracture was discovered external to the capsular ligament. The little trochanter was broken off, and with it the attachment of the psoas and iliacus muscles. The head and neck of the femur were separated from the shaft by a diagonal fracture, extending from the upper and outer part of the trochanter major to the trochanter minor, so as to leave the insertions of the pyriformis, gemellus, obturator externus and internus, and quadratus, with the head and neck of the bone. The glutæus medius formed a bond of union at the upper part of the trochanter major, between the broken pieces, retaining them in contact. The capsular ligament was not injured, and no steps whatever appeared to have been commenced to repair the mischief which had been committed. The great age of this person, and the trifling nature of the accident giving rise to so serious a fracture external to the capsular ligament, deserve remark.

In the dead body and when muscular power is extinct, the toes turn outwards, from the weight of the foot and limb preponderating in that direction. If the living body be placed on the back,

in the extended position, but in a state of quiescence, the same thing takes place, the weight of the limb being greatly assisted by the rotators of the thigh outwards, viz. the pyriformis, the gemellus, the obturator internus and externus, and the quadratus. Any kind of fracture, admitting of displacement, which can happen within the insertion of these muscles, will have the effect of increasing this eversion, as it diminishes the resistance to the contractile power of these muscles, which, stimulated to action by the injury, readily overcomes that of their antagonists, and particularly of the tensor vaginæ femoris, the glutæus minimus, and part of the glutæus medius.

When the fracture has taken place in such a manner as to be external to the insertion of these rotators outwards, yet sufficiently within the insertion of the glutæus medius and minimus, so as not to deprive them of their due action (as in the case of Sarah Gibson), the toe will be turned inwards, and must always be so; or remain without any alteration of position, according to certain variations in the inclination of the fracture affecting the power of these muscles. The effect which the breaking off the little trochanter, together with the attachment of the psoas and iliacus muscles, had on the position of the limb, must have been rather to assist the inversion of the toe than otherwise, but whether it be an essential part of the accident is to be determined by future observation.

When the thigh is broken immediately below the little trochanter, the upper portion of bone is carried outwards and upwards, in a manner deserving of particular attention. The power of the rotators outwards being infinitely greater than that of the rotators inwards, which can now act, viz. the glutæus medius and minimus, the broken extremity of bone would be pointed directly outwards, if it were not modified by the action of the psoas and iliacus, partly assisted by the pectinalis, which cause it to take rather a diagonal direction upwards, or forwards and outwards, constituting then, in every case, a rising and displaced extremity of bone which is the first step towards the shortening of the limb; a circumstance which has always been, although I conceive erroneously, attributed to the action of the long muscles inserted into the lower portion of the fractured bone. Those who have been conversant with amputation at the thigh at this part, will acknowledge the correctness of the remark, and do not forget, in placing the fractured limb in position, that if it be convenient to follow the movement caused by the psoas and iliacus, it is not less necessary to attend to that which has been effected by the rotators outwards.

When the thigh-bone is broken in any part below the little trochanter, the toes are turned outwards, provided the patient is placed in the extended position; which arises principally from the weight of the limb, increased by that of the bed-

clothes, and from the different effect produced by muscular action in fracture, to what takes place when the bone is in a state of integrity. The slight degree of influence the tensor vaginæ femoris can exert as a rotator inwards, is counteracted and invariably overcome. The long muscles and the adductor have lost the point d'appui and centre of motion afforded by the head of the femur, whilst the weight of the foot, at the extremity of the long lever of the leg remains, rather assist than retard, in the commencement of their action, the eversion of the fractured portion of the limb.

The inferences to be drawn from these observations, are,

1st. That whilst the eversion of the foot is characteristic of fracture, its absence does not indicate the non-existence of fracture.

2d. That the inversion of the foot is equally characteristic of fracture as of dislocation, and is only distinguishable, with reference to these two different states, by comparison, or a due estimate of the degree of inversion.

In the dislocation upwards and forwards, or on the dorsum ilii, the inversion of the foot is complete, the great toe is turned inwards, and rests on the instep of the opposite foot, being the first

or greatest degree of inversion. The limb is generally two inches shorter than the other.

In the dislocation backwards into the ischiatic notch, the inversion of the foot is decidedly marked, but is not so complete as in the preceding case. The knee and great toe turn in, the latter resting against the ball of the great toe of the opposite foot, and not admitting of rotation outwards. The limb is but little shortened, yet cannot be lengthened without great force.

In fracture the inversion of the foot is less complete, the great toe merely turns to the opposite one, and sometimes scarcely does this; the limb is but little shortened, is easily everted, readily moved in almost every direction, although not without pain, and is restored to its proper length on the application of a very moderate extension. This constitutes the third degree of inversion.

3d. That inversion of the foot does not take place in fracture within the capsular ligament, and that this symptom is rather diagnostic of a fracture through the trochanter major, a portion of it being continuous with the shaft of the bone.

The shortening of the limb, both in dislocations and fracture, is a subject which has not only met with great attention, but has given rise to considerable discussion. This appears to me to have

arisen, rather from a misunderstanding, than from any real difference of opinion; from not distinguishing between the symptoms which may be called immediate, and those which are consecutive; and from not considering the positive nature of the accident itself, which sometimes does not allow of any displacement of parts, although it will not admit of the accomplishment of their usual motions. Instances are recorded in which the patient walked several steps after the accident; and Dr. Colles, in the 2d volume of the Dublin Hospital Reports, has given the dissection of three cases, in which no displacement could have taken place, as the fractures were incomplete. I have known a man walk several steps after a fall on the trochanter, then become incapable of moving the limb, although no retraction of it took place; yet, on examination several weeks after, the deposition of bone behind the trochanter, uniting the parts, could be readily perceived. It is admitted, however, on all sides, that in relation to the retraction, as well as to the eversion of the limb, three or four hours must elapse before it assumes its most decisive character, and persons have not been wanting to assert that, in the first instance, the limb is rather elongated than shortened.

The shortening of the leg, in a recent case of fracture of the neck and upper part of the femur, that is, after the first twelve hours, will rarely exceed an inch and a half, and will seldom be found

to arrive at that, when due care is taken in the measurement of the part, by placing the patient on the back, and the two anterior superior spinous processes of the ilium on a line with each other. A diminution of the length of the limb to the extent of three or four inches, cannot, I presume, take place in a case of fracture within the capsular ligament, unless the ligament be torn through, and then only as the consequence of a long continued and unopposed action of the muscles, combined with the weight of the body on the limb. The obliquity of the pelvis, clearly demonstrated by Mr. Hunter in his lectures, forty years ago, as giving rise, in disease of the hip-joint, to a shortening of the limb, may augment the computation, if the admeasurement be not made from the anterior superior spinous process of the ilium.

The question of the greater or less shortening of the limb, with reference to the diagnosis of fracture within or without the capsular ligament, is one which does not easily admit of a satisfactory answer. By some it is asserted, that the fracture without the ligament is usually attended by a greater shortening of the limb, whilst the reverse is steadily maintained by others. This difference of opinion on an apparently mere matter of fact, would seem to imply great want of attention, but it really arises from the complicated nature of the subject; the greater or less diminution of the

length of the limb not depending, as the preceding case and dissection would show, on the circumstance of the fracture being within or without the capsular ligament, but on the precise nature of the fracture in either of these parts. If the solution of continuity of the cervix and its inverting membranes be not complete, as in some of the instances already referred to, a shortening of the limb may not take place. The same thing may occur if the bone be broken horizontally or diagonally, so that the upper portion prevents the rising of the lower; or the shortening may only be perceived after a lapse of several days. If, on the contrary, the fracture be effected with great violence, the lower portion of bone may be driven above the upper, or the capsular ligament may be torn, and the bone pass through it; in either of which cases, the shortening of the limb at the moment may be considerable.

If the fracture be external to the capsular ligament, but diagonally in the direction of the trochanters, the tendon of the glutæus medius retains, independently of the attachment of other parts, the separated portions of bone nearly in contact, and, being attached to each, prevents the material elevation of either, and there is scarcely any shortening of the limb. But if the fracture be effected with great violence, the solution of continuity being complete, and external to the capsular liga-

ment, although including as little as possible of the trochanters, there can hardly be a doubt that the diminution of the length of the limb may extend to, or even exceed two inches in the course of a few days, there being little obstacle to the muscles exerting an influence on the part nearly as powerful as in a case of dislocation upwards.

The greater or less extent of shortening of the limb, considered separately, cannot form a criterion by which the judgment can be guided as to the immediate seat of injury. As a general rule, however, founded on experience, although admitting of considerable exception, I would say, the shortening of the limb within the first forty-eight hours, is less when the fracture is external to the ligament, than when it is within it; from the circumstance of its being most frequently diagonally through the trochanter, as in the instances adduced.

A greater degree of pain, swelling, soreness, and contusion, would seem to indicate, in general, a fracture external to the ligament, rather than within it. A crepitus, or the sensation caused by the rubbing of the broken bones against each other, cannot always be distinguished, even when the limb has been drawn down to its proper length*. The change of position of the great trochanter in fracture, is frequently so trifling as

* M. Lisfranc, in a memoir published in August, 1823, on the use of the Stethoscope, says, "all difficulty vanishes before

not to be readily ascertained, and the alteration of its motion from its natural state, on rotating the knee inwards, is frequently unsatisfactory.

The mobility of the limb in fracture, and its immobility in dislocation, have, until lately, been considered diagnostic marks of these two kinds of injury. Mr. Todd mentions, however, in the 3rd volume of the Dublin Hospital Reports, that Mr. Cusack and himself had each a case of dislocation, in which the limb admitted of an extensive degree of motion; a fact which demands attention, as showing that the judgment must be formed from comparison. In a case of fracture, motion *can* be fully accomplished in every direction, although it is sometimes attended by great pain. In dislocation, motion cannot be given to the limb in every direction to the same extent, and least of all towards complete abduction. The shortened limb in dislocation cannot be restored to its proper length without the application of the force of several persons; in fracture it may be readily accomplished by the surgeon alone. In dislocation the limb once restored to its proper length, remains so; in fracture it is very soon retracted or shortened as much as before.

this instrument"; that "the crepitus is distinguished on the slightest movement of the limb, and sounds as strongly on the anterior part of the crista ilii as over the joint; it is very remarkable on the patella, and extends along the whole of the limb."

ON

THE EFFECTS

OF

LOSS OF BLOOD.

By MARSHALL HALL, M.D. F.R.S. Ed. etc.

Read Nov. 23d, 1824.

THE subject of the present essay appears to me to have escaped, in a great measure, the attention both of the physiologist and of the practical physician. The immediate effects of a sudden hæmorrhagy or copious loss of blood are, indeed, sufficiently known; but I am not aware that any author has described with accuracy and distinctness the secondary or more remote effects of loss of blood, in the various circumstances of repetition or continued flow in which it may occur. And yet, when we reflect how often blood-letting is employed as a remedy, and how frequently hæmorrhagy occurs as a disease, it must be considered of great moment, as well as interest, to trace the varied effects of a diminished quantity of blood on the different functions and organs of the animal frame.

This inquiry possesses a higher interest still, if, as I believe, and hope to explain in the ensuing observations, the more obvious effects of loss of blood are such as suggest the idea of increased power and energy of the system, and lead to an erroneous and dangerous employment of the lancet, when a directly opposite treatment is required. It is now several years since I began the investigation, the results of which I am about to detail. I had for some time contemplated an experimental inquiry, when several opportunities occurred to me, and one especially under extraordinary circumstances, of observing the effects of loss of blood in the human subject; and it will be readily apprehended how much more important it is to have observed the phenomena in question, in instances in which the mental affections and the sensations could be ascertained, as well as the changes in other functions, than merely to have noticed effects obvious to the eye alone.

In stating the results of my observations on the effects of loss of blood, I propose to adopt the following arrangement: I shall treat

I. Of the immediate effects of loss of blood, chiefly syncope, and of the re-action or failure of the vital powers.

II. Of the more remote or cumulative effects of repeated or protracted loss of blood,—or

Exhaustion; and 1. Of exhaustion with excessive re-action; 2. Of exhaustion with defective re-action; 3. Of exhaustion with sinking.

III. Of the effects of further loss of blood in cases of exhaustion. 1. Of the substitution of syncope for re-action; 2. Of the transition of the state of re-action into that of sinking; 3. Of sudden dissolution.

IV. Of the influence of various circumstances on the effects of loss of blood. 1. Of age, &c.; 2. Of disease.

V. Of the effects of loss of blood on the internal organs. 1. The brain; 2. The heart; 3. The lungs; 4. The intestinal canal, &c.

I. Of the immediate effects of loss of blood, chiefly syncope, and of the re-action or failure of the vital powers.

The most familiar of the effects of loss of blood is syncope. The influence of posture, and the first sensations and appearances of the patient, in this state, appear to denote that the brain is the organ the function of which is first impaired; the respiration suffers as an immediate consequence; and the action of the heart becomes enfeebled, first from a deficient quantity of blood, and secondly from its deficient arterialization. The ca-

pillary circulation also suffers, and if the state of syncope be long continued, the stomach and bowels become affected. In ordinary syncope from loss of blood, the patient first experiences a degree of vertigo, to which loss of consciousness succeeds. The respiration is affected in proportion to the degree of insensibility, being suspended until the painful sensation produced rouses the patient to draw deep and repeated sighs, and again becoming suspended as before. The beat of the heart and of the pulse is slow and weak; the face and general surface become pale, cool, and bedewed with perspiration; the stomach is apt to be affected with eructation or sickness. On recovery there is perhaps a momentary delirium, yawning, and a return of consciousness; irregular breathing in sighs, and a gradual recovery of the pulse.

In cases of profuse hæmorrhagy the state of the patient varies: there is at one moment a degree of syncope, then a partial recovery. During the syncope the countenance is extremely pallid; there is more or less insensibility; the respiratory movements of the thorax are at one period imperceptible, and then there are irregular sighs; the pulse is slow, feeble, or not to be distinguished; the extremities are cold, and the stomach is frequently affected with sickness. I have observed that when the movements of the chest, in the interval between the sighs, have been imperceptible or nearly so, the respiration has still been carried on by

means of the diaphragm. It may also be remarked that the state of syncope is often relieved, for a time, by an attack of sickness and vomiting; immediately after which the patient expresses himself as feeling better; the countenance is somewhat improved, the breathing more natural, and the pulse stronger and more frequent.

In cases of fatal hæmorrhagy there are none of these ameliorations. The symptoms gradually and progressively assume a more and more frightful aspect. The countenance does not improve, but becomes pale and sunk; the consciousness sometimes remains until towards the last, when there is some delirium, but every thing denotes an impaired state of the energies of the brain. The breathing becomes stertorous, and at length gasping. The pulse is extremely feeble or even imperceptible. Animal heat fails, and the extremities become colder and colder in spite of every kind of external warmth; the voice may be strong, but there is constant restlessness and jactitation. Ultimately the strength fails, and the patient sinks, gasps, and expires.

From the state of syncope the system usually recovers itself spontaneously, if the cause by which the syncope was induced be discontinued. The principle by means of which this recovery is effected, may, without involving any hypothesis, be denominated *re-action*. This re-action of the

system may, under different circumstances, be excessive or defective, or it may be destroyed altogether, each state leading to a corresponding series of phenomena. The description of these varied phenomena is reserved for the ensuing section. Previously however to leaving this part of our subject, it may be proper to notice that the brain is sometimes affected by loss of blood in a very different manner, and, instead of syncope, there are attacks of convulsion. Dr. Kellie observes that "fits resembling apoplexy and epilepsy, as well as fits of syncope, occasionally supervene to venesection at the arm"*; and Dr. Armstrong states that "bleeding to syncope in young children may sometimes lead even to fatal convulsions."†

II. Of the more remote or cumulative effects of repeated or protracted loss of blood, or Exhaustion.

The re-action or recovery from ordinary syncope is generally a simple return to a healthy state of the functions or nearly so, the pulse not passing beyond its natural frequency. In cases of profuse loss of blood, on the contrary, the recovery is not quite so uniform, and the pulse acquires and retains a morbid frequency for a certain length of time; this frequency of the pulse gradually subsides, however, and is unattended by

* Edinb. Med. Chir. Trans. Vol. I. p. 105.

† On Puerperal Fever, 2d edit. p. 191.

any other symptom of indisposition of any consequence. The phenomena are very different, if, instead of one full bleeding to syncope, or of a profuse hæmorrhagy, and even protracted syncope, the person be subjected to repeated blood-lettings or to a continued drain. In this case, within certain limits, the pulse, instead of being slow and feeble, acquires a morbid frequency and a throbbing beat, and there are, in some instances, all the symptoms of excessive re-action of the system, which it is my object now to describe.

The state of excessive re-action is formed gradually, and consists, at first, in forcible beating of the pulse, of the carotids, and of the heart, accompanied by a sense of throbbing in the head, of palpitation of the heart, and eventually perhaps of beating or throbbing in the scrobiculus cordis, and in the course of the aorta. This state of re-action is augmented occasionally by a turbulent dream, mental agitation, or bodily exertion. At other times it is modified by a temporary faintness or syncope. In the more exquisite cases of excessive re-action the symptoms are still more strongly marked. The beating of the temples is now accompanied by a throbbing pain of the head, and the energies and sensibilities of the brain are morbidly augmented. Sometimes there is intolerance of light, but still more frequently intolerance of noise and disturbances of any kind, requiring stillness to be strictly enjoined, the knockers to be tied,

and straw to be strewed along the pavement. The sleep is agitated and disturbed by fearful dreams, and the patient is liable to awake in a state of great hurry of mind, sometimes almost approaching to delirium. In general this is slight, but occasionally severe and even continued. More frequently there are great noises in the head, as of singing, of crackers, of a storm, or of a cataract; in some instances flashes of light are seen. Sometimes there is a sense of great pressure or tightness in one part or round the head, as if the skull were pressed by an iron nail, or bound by an iron hoop.

The action of the heart and arteries is morbidly increased, and there occur great palpitation, and visible throbbing of the carotids, and sometimes even of the abdominal aorta, augmented to a still greater degree, by every hurry of mind or exertion of the body, by sudden noises or hurried dreams and wakings. The patient is often greatly alarmed and impressed with the feeling of approaching dissolution. The state of palpitation and throbbing are apt to change, at different times, into a feeling of syncope. The effect of sleep is in some instances very extraordinary; sometimes palpitation, at other times a degree of syncope, or an overwhelming feeling of dissolution. The pulse varies from 100 to 120 or 130, and is attended with a forcible jerk or bounding of the artery.

The respiration is apt to be frequent and hurried, and attended with alternate panting and sighing; the movement of expiration is sometimes obviously and singularly blended with a movement communicated by the beat of the heart; the patient requires the smelling-bottle, the fan, and fresh air. In this state of exhaustion, sudden dissolution has sometimes been the immediate consequence of muscular effort on the part of the patient.

The phenomena of excessive re-action are mostly observed in young persons of robust constitution, who have been subjected to repeated blood-letting. In infants, in feeble persons, and in rather advanced years, re-action after loss of blood is for the most part defective. In this case the patient long remains pale, thin, and feeble, and becomes faint on the slightest occasions; the pulse is frequent, but feeble and perhaps irregular, and we look in vain for the throbbing and palpitation observed in the young and robust. This state either gradually yields to returning strength, or subsides into the state of sinking. In the study of the effects of loss of blood it is particularly necessary to bear in mind this difference of the phenomena arising out of the previous state of the constitution, whether of vigour, or of feebleness.

The symptoms of *exhaustion with excessive re-*

action may gradually subside, and leave the patient feeble, but with returning health, or they may yield to the state of *sinking*. This term is adopted, not to express a state of negative weakness merely, which may continue long and terminate in eventual recovery, but to denote a state of positive and progressive failure of the vital powers, attended by its peculiar effects, and by a set of phenomena very different from those of exhaustion with re-action. In the latter the energies of the system were augmented; in the former the functions of the brain, the lungs, and the heart are singularly impaired.

The sensibilities of the brain subside, and the patient is no longer affected by noise as before. There is, on the contrary, a tendency to dozing, and gradually some of those effects on the muscular system, which denote a diminished sensibility of the brain, supervene, as snoring, stertor, blowing up of the cheeks in breathing, &c.; instead of the hurry and alarm on awaking, as observed in the case of excessive re-action. The patient in the state of sinking requires a moment to recollect himself and recover his consciousness, is perhaps affected with slight delirium, forgets the circumstances of his situation, and, inattentive to objects around him, falls again into a state of dozing.

Not less remarkable is the effect of the state of exhaustion with sinking on the functions of the

lungs. Indeed the very earlset indication of this state is, I believe, a crepitus in respiration, only to be heard at first on the most attentive listening. This crepitus gradually becomes more audible, and passes into slight rattling, heard in the situation of the bronchia and trachea. There is also a degree of labour or oppression in the breathing, inducing acuteness in the nostrils, which are dilated below, and drawn in above the lobes at each inspiration; in some cases there is besides, a peculiar catching laryngal cough, which is especially apt to come on during sleep, awaking the patient. The heart has, at the same time, lost its violent beat and palpitation, and the arteries their bounding or throbbing. The stomach and bowels become disordered and flatulent, and the command over the sphincters is impaired. The last stage of sinking is denoted by a pale and sunk countenance, inquietude, jactitation, delirium, and coldness of the extremities*.

* I have already described, in a cursory manner, some of the effects of loss of blood, in two recent publications; the first in 1820, entitled "Cases of a Serious Morbid Affection arising from Irritation and Exhaustion"; the other in 1822, "An Essay on the Symptoms and History of Diseases", see chap. v. Since these periods I have seen several allusions to this important subject, and one especially by Mr. Cooke, in his useful and able abridgement of Morgagni. The observations of this author are highly valuable, and they have been confirmed by Dr. Kellie*, and, as far as the *symptoms* go, by myself.

Mr. Cooke observes, "after uterine hæmorrhage, and also

* Edinb. Med. Chir. Trans. Vol. i. p. 105.

The symptoms of exhaustion, first with re-action, but gradually passing into the state of sinking,

after copious depletion on account of pulmonary and other inflammations, I have frequently observed the symptoms of cerebral congestion, and which has generally appeared to arise from the excitement occasioned by some mental effort, though occasionally it has arisen without an evident cause. Whilst the other parts of the body appear comparatively bloodless, the vessels of the head throb violently; there is severe pain; confusion of intellect sometimes to such a degree as to threaten delirium; the pulse at the wrist is usually small and vibrating, and the countenance distressed. When I first observed these symptoms I was led to abstract blood, from an apprehension of phrenitis, but I did harm, for, if the urgency of symptoms was diminished, the susceptibility to a recurrence was increased, and restoration to health protracted. The liability to this form of cerebral plethora has appeared to me to be proportionate to the preceding hemorrhage and the consequent debility. If, in this condition, an intrusive visitor be admitted to converse, though but for a short time, with the patient, or if the patient attempt to read, or in any other way to employ the mental faculties beyond what is perfectly easy, or if the mind be agitated, this state of the head will almost inevitably be induced. It may, however, be brought on by all those causes which tend to destroy the equilibrium of circulation, and none are more likely in this condition of the patient than noise in the room, deficiency of sleep, improper food, a constipated state of the bowels, or a morbid state of the secretions into them. This susceptibility to local congestion after excessive loss of blood, I presume depends upon the want of that due balance which, in a state of health, subsists between the nervous and vascular systems; but I am jealous of hypotheses in medicine, and to pursue them in the present work would be unwarrantable." vol. i. p. 73.

"From the peculiarity of the conformation of the nose, epistaxis is sometimes a most uncontrollable form of hemor-

are exemplified in a remarkable manner in the following case, the circumstances of which were more accurately noticed as they occurred in the person of a much respected friend and intelligent mem-

rhage. I have recently seen two cases in which, if it were not absolutely the occasion of death, it certainly accelerated that event. The first was in a gentleman who laboured under hydrocephalus. He was a susceptible man, and would not endure a plug in the nostril. The hemorrhage frequently occurred; and when he had become excessively pallid from loss of blood, it was curious to observe to what an extent the irritative hemorrhagic action was propagated. At first he only distinguished pulsation in and about the nose, but as his strength decreased, and his anxiety and susceptibility were heightened, the carotids could be seen throbbing vehemently, and a corresponding action was perceptible to the patient through their ramifications. The second case was in an old arthritic sufferer, who had been seized with cynanche parotidæa. The more acute inflammation had subsided, but the gland was much enlarged and indurated, and the jaw nearly rigid. In this state he was attacked with bleeding from the nose. It occurred sometimes when he was asleep, on which occasions he was threatened with suffocation from the formation of coagula in the fauces, which he removed with the utmost difficulty in consequence of being unable to open his mouth. The hemorrhage commenced in the nasal cavity nearest to the enlarged gland, but it afterwards took place from both nostrils. He was excessively afflicted with gout, and had indications of hepatic disorganization, but the immediate cause of death was the repeated effusion of blood. The hemorrhagic action was not so extensively manifest as in the preceding case, but when there was feebleness in the radial artery and the extremities were cold, the patient was conscious of a strongly irritative throbbing in the arteries ramifying through the nose and circumjacent parts." vol. i. p. 110.

ber of the profession, and principally under my own roof.

CASE I.

Mr. C. C. aged forty, of an extremely muscular and robust make, was returning from Nottingham into the country on the 3d of October 1821, when his horse reared, and fell backwards upon him, fracturing the third and fourth ribs of the left side. He was taken to an inn, and I saw him with a surgeon early on the following morning. He then suffered extreme pain of the side; there was a distinct crepitus but no emphysema; the face was somewhat bruised, swollen, and ecchymosed; the pulse was 100, and strong. Sixteen ounces of blood were taken from the arm, a dozen leeches were applied to the temples, and the same number over the fracture of the ribs; the motions of the chest were restrained by a tight bandage; calomel and purging medicines were freely given. At noon sixteen ounces of blood were again drawn from the arm, and a surcingle was applied round the chest.

During the whole of the 5th of October, the second day after the accident, Mr. C. appeared to be going on well, but at night a violent attack of pain of the side induced him to bleed himself; this was done to syncope, and as a large wash-hand-basin was used to receive the blood, its quantity

epi.

was not known, but must have been very considerable. Seventeen leeches were then applied to the side and shoulder, with great relief. The surcingle, which had been removed, was re-applied, and the mercury and purgatives were continued. Early on the morning of the third day, there was another violent attack of pain of the side with dyspnœa; a messenger was despatched for the medical attendants, but before their arrival Mr. C. had again bled himself, and taken away sixteen ounces of blood, unable to endure the pain. In another hour eight ounces more were drawn, the patient sitting upright; this was followed by syncope and great relief of pain.

On the fourth day, Mr. C. was removed a distance of about one mile to my house, and bore the journey on a litter extremely well, having previously lost a teacupfull of blood; he expressed himself as feeling better than at any time since the accident. In the evening an increase of pain took place, and about seven ounces of blood were taken with great relief. In all it would appear that Mr. C. lost at least one hundred and twenty ounces of blood.

On the fifth day we were joined in consultation by an eminent physician and surgeon. There was much pain of the side, and it was at first proposed to take away more blood; but I had observed some of the symptoms which I knew to indicate

re-action from exhaustion, and the venesection was omitted.

On the sixth day, the following circumstances were noticed. There was some degree of dyspnœa and of pain in the side, and the patient had removed the surcingle in the hope of obtaining relief; the mouth was affected with ptyalism. The pulse was 100, and had acquired a peculiar jerk; there was violent throbbing of the carotids, a pulsatory pain of the head, intolerance of noise, and, in a slight degree of light; at one time in the morning of this day great agitation had been induced by a knock at the door. On account of the intolerance of sound, the pavement was directed to be strewed with straw, and the ringing of the bells of the adjacent church discontinued. The bowels were freely moved: a draught, with tinctura opii and spiritus ammoniæ aromaticus, was given, with broth, arrow-root, sago, &c.

Seventh day.—The patient was rather better towards evening yesterday. All the symptoms of strong re-action continued as before. The head has been much relieved by the application of a cold lotion.

On the succeeding day the pulse was 84 only, and had lost, in some degree, its peculiar jerk; the carotids beat less violently; the head was so much better as to render the lotion unnecessary;

there was more tranquillity and some hilarity of mind. The aperients, the anodyne, and the nourishment were continued.

I saw my patient about 3 o'clock a.m. on the ninth day, and I then heard the slightest degree of that crepitus in the breathing which I have already noticed as one of the first symptoms of sinking. The medical gentlemen met at nine, and the general symptoms were then so little changed that no degree of alarm was excited in their minds. I mentioned my fears, and the grounds on which they were formed. At this meeting cupping was proposed; but the changes in the patient were afterwards so rapid that brandy was recommended in the evening. The pulse was 110, in the middle of the day, unattended by its previous force and jerk, and easily compressible; the beating of the carotids had subsided; a slight degree of stupor was observed; on being left undisturbed the patient fell asleep and snored; there was some labour in the respiration, and a troublesome, dry, laryngal cough; although the bandage was loose, there was no pain of the side of the chest; the countenance was anxious. The symptoms assumed a more alarming form during the day; at night there was considerable stupor, and, when the patient was roused, a degree of delirium; during this sleep there was much snoring and puffing up of the cheeks in expiration. On awaking he would feel greatly concerned that he should

have appeared to blow in your face. There was much flatulence; the motions were extremely offensive, and passed at each attempt to void urine.

From midnight he could scarcely be roused, but if awoke he would speak collectedly, but in a hurried manner, and said he felt "such a dying feel". The pulse was about 120. At three o'clock a.m. I saw my patient; there was little change in the pulse or other symptoms, but in a minute or two the pulse became slow, feeble and irregular, he altered rapidly, and I found that he was moribund; in a few minutes more he expired.

On dissection the pleura was found morbidly red in the vicinity of the fracture, but not wounded; there was some effusion of lymph in its cavity. The right lung was found united to its contiguous pleura by old adhesions.

CASE II.

Mrs. Burrows, aged twenty-eight, of a stout constitution. After delivery there was uterine hæmorrhagy, which continued to recur for the twelve subsequent months. It was then discovered that Mrs. Burrows laboured under polypus uteri. A ligature was applied, purgative medicines given, and the patient presently recovered. The case is introduced in this place in order to present the de-

tail of symptoms arising from a *continued drain* or loss of blood. There were, 1. beating of the temples, a sense of "knocking" in the head, vertigo, dimness of sight, singing in the ears, terrific dreams, and starting from sleep. 2. Frequency of the pulse, pulsation of the carotids and aorta, fluttering and beating of the heart, faintishness, and a sense and fear of dissolution. The palpitation of the heart on awaking was sometimes such as to move the bed-clothes, the bed, and, it is said, even the door. 3. The breathing was short and hurried, sometimes with panting, sometimes with sighing. 4. There were urgent calls for air, for opened windows, and the smelling-bottle; and the nostrils and temples were required to be bathed with sal-volatile or vinegar.

The countenance, prolabia, and tongue were pallid; the legs somewhat œdematous; the bowels were irregular, the secretions morbid. Once there was obstinate constipation; frequently the bowels were merely confined, sometimes with sickness, but always with an increase of all the symptoms.

It would be difficult, perhaps, to offer any observations on the nature and cause of excessive re-action; but it is plain that the state of sinking involves a greatly impaired state of the functions of all the vital organs, and especially of the brain,

from defective stimulus. The tendency to dozing, the snoring and stertor, the imperfect respiration, the impaired action of the sphincters, the defective action of the lungs, and the accumulation of the secretions of the bronchia, the feeble and hurried beat of the heart and pulse, the disordered state of the secretions of the stomach and bowels, and the evolution of flatus, all denote an impaired condition of the nervous energy. The state of sinking may, indeed, in certain points of view, be compared with the state of the functions in apoplexy, and with the effects observed on abstracting the influence of the brain and spinal marrow by dividing the eighth pair of nerves, or destroying the lower portion of the latter organ*.

III. On the effects of further loss of blood in cases of exhaustion.

The symptoms of exhaustion with re-action have, I am persuaded, frequently been mistaken for those of *inflammation*, or other disease of the *head* or of the *heart*. Under this impression recourse has frequently been had to the further detraction of blood by the lancet, and the effect of this practice is such as greatly to impose upon the inexperienced, for all the symptoms are perhaps fully relieved. It was some time before I could fully comprehend the nature of this fact.

* See Dr. Phillip's work on "The Vital Functions", passim.

I had satisfied myself that, in certain cases, the symptoms were those of loss of blood, and yet it appeared no less certain that those very symptoms were relieved by the lancet. At length I discovered, by careful observation, that the symptoms which were relieved were those of re-action, and the mode of relief the substitution of syncope; that the relief endured as long as the state of faintishness continued, but returned as this state gave way to the rallying and re-action of the vital powers.

Another circumstance, equally interesting and curious, is, that within certain limits the remedy which relieves for a time, eventually only adds to the severity of the malady, which is apt to return after a certain period in a still more aggravated form. It is natural, indeed, to suppose that, unless where there is a tendency to failure of the vital powers, the re-action of the system and the painful circumstances attending it, would be greater after a third or fourth loss of blood, than after a first or second. Indeed there are seldom symptoms of re-action after one flow of blood, however great or profuse. The repetition or protraction of the cause is essential to produce this effect. It is observable, too, that in cases of exhaustion with re-action, syncope is very soon produced by the further loss of blood. This fact is of importance, because it may be regarded as a *sign* of the state of exhaustion when obscured by

the re-action of the system, and as a warning voice against the further and inconsiderate use of the lancet.

If the loss of blood be repeated still further, not only syncope, but a state of sinking is induced; the effects of re-action are, of course, in this case, permanently relieved; whilst a different series of phenomena, already fully described, is established. This transition of re-action into sinking may either be spontaneous, as in the case of Mr. C. C. detailed in the preceding section; or it may be the effect of a last bleeding, the state of syncope scarcely ceasing, with a total though gradual failure of the vital powers. These facts are illustrated by the following cases.

CASE III.

Mrs. Darker, aged twenty-one, of a rather feeble constitution, was confined of her first child. On the fifth day, the bowels having been constipated, she became much indisposed with flushing of the countenance, noise in the ears, as of a rushing wind or the explosion of crackers, flashes of light on lying down, beating of the carotids, &c., the pulse being 120 in a minute. Fourteen ounces of blood were taken from the arm, which induced *deliquium* with *relief* to the symptoms. About seven hours afterwards the noises in the head returned, and the pulse was 120; twelve

ounces of blood were again drawn, and the patient again fainted. Eight ounces of blood were taken the next day. Early on the succeeding morning, the medical attendant was called; there had been little sleep, but much lowness for several hours; the patient then complained of violent beating in the head; the pulse was 120. A teacupfull of blood was taken, which *induced faintishness and abated the beating of the head.* By noon she was again flushed, and the beating had returned in an aggravated degree. From this period the patient was bled no more, but recovered under the influence of aperient and anodyne remedies.

CASE IV.

Mrs. D., aged thirty-five, was confined in June, 1818. The expulsion of the placenta was followed by much hæmorrhagy, which induced great exhaustion. On the tenth day, she was seized with severe shivering, heat, throbbing pain of the head, and intolerance of light and sound. Ten ounces of blood were taken from the arm, about ten o'clock, a.m., *which induced faintishness and gave relief.* At seven o'clock in the evening, the pain of the head was as severe as ever, and twelve ounces of blood were taken from the arm. This was followed by dreadful faintness, and gasping breathing, so as even to lead to the apprehension of dissolution. On recovering, the pain and intolerance of light

and sound returned as before. This patient became affected with all the symptoms of exhaustion with re-action, but gradually recovered without further venesection.

When the last bleeding has been considerable, it has, in some cases, been followed by the most dreadful gaspings and other convulsive motions, and death. It should be observed that between the most gradual sinking and the most sudden dissolution, as the effects of blood-letting, there is every intermediate shade, with the phenomena of which it is of the utmost importance to be acquainted. These varied phenomena may, I think, be collected from the observations which have been made in this and the preceding sections. They are further illustrated by the following cases which exemplify the fatal effects of loss of blood, as they supervene *more* or *less* gradually upon the use of the lancet.

CASE V.

Mrs. ——, aged thirty, had been affected with a slight attack of influenza. She was seized with rigor, and soon afterwards the pains of labour came on. Delivery was effected in about fifteen hours, at nine o'clock, a.m., which was followed by much fever, the countenance being flushed, the pulse

frequent, and the breathing difficult, with incessant cough. These symptoms increased towards evening and in the night, and about forty ounces of blood were drawn from the arm at two blood-lettings. The next morning twelve leeches were applied to the chest, with great relief. In the evening a blister was applied. The night was passed more comfortably: she dozed a little, and was cheerful, and continued relieved in the morning. As a preventive against a relapse, however, three tea-cup-fulls of blood were taken. The patient became faint during the flow of the blood, sank from that time, and never again rallied. She became extremely feeble, and could scarcely articulate, and, from being cheerful the day before, was now impressed with the conviction of approaching dissolution, and expressed herself as unable to recover from the last bleeding. During this day, Saturday, and the two succeeding days, there was a state of extreme exhaustion, and still a sense of load at the chest, and pain of the side. On Tuesday the countenance was observed sometimes to flush to a deep scarlet, and then to become quite pallid, while a profuse perspiration frequently ran down the face. The pulse was extremely frequent, and the pain severe on coughing; there was no delirium, though she awoke hurried from sleeps which she described as "just like death." During the four following days there was little obvious change; distressing faintings usually came on about two or three o'clock, p.m.

On Sunday she became drowsy and evidently sinking, and she died in the evening of the succeeding day.

CASE VI.

Mrs. V., was of a pale sallow complexion, and weakly constitution. Six days before her confinement of her first child, she was awaked in the night by severe pain of the head confined to one spot. This pain continued several hours, when Mrs. V. applied to her medical man. She was completely relieved by losing sixteen ounces of blood, followed by purgative medicine, and she continued well. Mrs. V.'s labour occurred on the 1st of September, 1817, and was rather tedious, but natural, and she had no complaint until the second day, when she experienced a second attack of pain in the head, but less violent than the previous one. She was seen six hours after this attack; she then complained of pain and beating of the head, about the anterior part of the right parietal bone; the skin was hot, and the pulse frequent and strong. Sixteen ounces of blood were taken from the arm, leeches were ordered to be applied to the temples, and an enema and purgative medicine were prescribed. In three hours' time Mrs. V. was again visited, and it was deemed necessary to abstract more blood. Six or eight ounces were therefore taken; faintishness was induced, and the symptoms were abat-

ed. On the succeeding morning, September the 4th, the symptoms still remained the same; the surface was hot; the bowels had been purged, and the evacuations were natural; the saline mixture was ordered. At noon the purgative medicine was repeated and a blister was applied. In the evening, the evacuation of the bowels was satisfactory; the pain of the head was not severe, but there was much beating, and a rushing noise, with restlessness and a teazing irritative cough. A draught, with thirty drops of the tinctura opii, was administered. The next morning, September the 5th, Mrs. V. expressed herself as feeling much better, having enjoyed comfortable sleep. The surface was still hot, and the head affected as before. In the evening there was a degree of tenderness in the region of the uterus. She dreaded the idea of being bled, from the faintishness she had before experienced from it, and said it would certainly kill her. On the morning of the 6th, the pain in the region of the uterus was relieved, but the head remained as before; the window was kept open for want of air. In the evening Mrs. V. complained of being faint and low. A mixture with camphor and sulphuric æther was prescribed. On the 7th the irritative cough again occurred; the pulse was frequent, from 120 to 130; and the other symptoms remained unabated.

A physician was consulted. Sixteen ounces of blood were directed to be taken from the arm; a

grain of calomel was given every three hours, and the effervescing medicine was ordered. On the morning of the 8th, Mrs. V. appeared to be relieved in every respect; the heat of surface and the pain of the head were diminished; the blood presented the buffy coat. It was thought proper to abstract more blood, as the last bleeding had apparently conferred benefit, and had been borne better than the preceding ones. Four tea-cupfulls of blood were taken. The most dreadful faintings followed, with gasping, open mouth, and a convulsive action of the diaphragm; and in an hour or two death closed the scene.

IV. Of the influence of various circumstances on the effects of loss of blood.

The first and principal circumstance which modifies the effects of loss of blood has reference to the *strength* of the patient. Cæteris paribus, the degree of re-action is proportionate to the degree of strength. In infancy, in declining years, and in those of feeble constitution, there is *defective re-action* after loss of blood, the phenomena of which have been already detailed. The state of syncope is then a state of danger, and a second or third blood-letting is borne with difficulty. In youth, and in the vigorous and robust, on the contrary, the re-action is strong, and especially marked after

repeated venesections. In the strong, the state of sinking is even preceded by that of *great re-action*, unless indeed the strength be overwhelmed by the degree or early repetition of the evacuation. In the feeble it steals on insidiously and gradually, unmarked by re-action of the system.

The other circumstances which exert an influence on the effects of loss of blood, are certain states of disease. And I must, in this place, particularly remark, that the state of intestinal irritation leads to those effects of blood-letting which I have described as exhaustion; whilst inflammation seems to protect the system from the effects of loss of blood. In the former case throbbing is soon induced, unless indeed it be prevented by a state more nearly allied to syncope; in the latter, blood-letting is followed by little of re-action until the state of inflammation be subdued, and the system freely exposed to the uncontrouled influence of loss of blood. In the former there is danger from full depletion; in the latter, this measure is providentially not less safe than necessary.

In all cases we are only to expect the phenomena of re-action where a *certain quantity* of blood has been lost. One bleeding, although large, and even a continued drain, if not considerable, will not induce exhaustion, the powers of the system being sufficiently great to *recruit* and to *restrain* its actions. But exhaustion is sooner induced under

circumstances of intestinal irritation, and less so under those of inflammation than in health; and re-action is the consequence, unless the strength of the patient be low, and then it is defective, or even gives way to a state of positive sinking. Each successive blood-letting is of course attended with increasing risk. There is considerable danger where the re-action is strong; still greater when it is feeble. A large blood-letting in such cases may be followed by sudden death. There is great danger when fainting has been several times induced, and where there is the least tendency to "want of air."

V. On the effects of loss of blood on the internal organs.

We are altogether in want of a series of observations on the effects of loss of blood on the internal organs. There is, I think, reason to suppose that a state of exhaustion from loss of blood may lead to effusion into the ventricles of the brain; and a case* published by the late Dr. Denman sufficiently proves that such a state of exhaustion is no protection against an attack of apoplexy. From these circumstances we may conclude that there is, even in cases of exhaustion from loss of blood, increased action or fulness of the vessels of the brain.

* Transactions of a Society for the Improvement of Medical and Surgical Knowledge, Vol. III. p. 315.

The morbid state of the secretory function of the lungs in exhaustion with sinking has already been mentioned, and there is no question that, in protracted cases of this nature, the bronchia must become clogged, and the arterialization of the blood impeded. The state of flatulency, and the fœtid evacuations of the intestines, sufficiently denote the morbid condition of this internal organ. There is also, in extreme cases of exhaustion, a general tendency to serous effusion, both into the internal cavities and into the cellular membrane. This effect of the loss of blood has been very long remarked by medical writers.

As I have carefully avoided, in this essay, the statement of any circumstance which I did not think amply substantiated by well-observed facts, I shall leave this part of my subject to be elucidated by future observation. I still have it in view to investigate the *organic effects*, and especially the *remedies* of loss of blood, by a series of experiments.

CASES

IN WHICH THE OPERATION FOR

THE REMOVAL

OF

CICATRICES FROM THE NECK,

CONSEQUENT ON BURNS,

WAS

SUCCESSFULLY PERFORMED;

WITH REMARKS.

By J. H. JAMES,

SURGEON TO THE DEVON AND EXETER HOSPITAL.

Read January 11, 1825.

THE profession and the public are much indebted to Mr. Earle for the practice he has recommended and introduced in deformities consequent on burns*. In one species, however, arising from this cause, it certainly would appear that great difficulty has arisen in the application of his principle, and we have very high authority for believing that relief is not commonly obtained †. I allude to those cases where the cicatrix exists be-

* See two papers contained in the 6th and 7th volumes of the Medico-Chirurgical Transactions.

† Sir Astley Cooper's Lectures, edited by Mr. Tyrrel, vol. I. p. 178.

tween the lower jaw and sternum, an occurrence unfortunately not unfrequent. Three of these have come under my care, and in the two last every benefit was obtained from the operation that could be expected or desired. These cases I will relate, as they will serve to explain the plan I adopted.

CASE I.

Elizabeth Bully, a girl between eight and nine years of age, was admitted a patient of the Devon and Exeter Hospital, on account of a cicatrix of this kind, the consequence of a burn from which she had suffered about seven months before. It was large, broad, and dense, tying down the chin closely to the sternum, so that there was not an interval of more than an inch between them by measure: it was situate a little towards the left side, and the corner of the mouth was a good deal drawn down by it: it also projected much from the ordinary surface of the neck, so as to efface the projection of the chin.

March 9, 1824.—I performed the operation in the following way: I made two incisions, one at either edge of the cicatrix, extending to its termination at the upper part of the sternum where they met; I then dissected up the flap, of which I removed no part, but having completely freed it, I found I was able to dispose of it out of sight under the chin. The distance between the sternum and

the chin was now increased to at least three inches by measure *.

I supported the cicatrix in its situation, first by broad straps of adhesive plaster, and secondly by a compress of lint secured by a broad fillet fastened at the top of the head, so as to make a good chin. I then tried to approximate the edges of the wound beneath by straps of plaster, but this could only be accomplished in a partial manner. I then put on the screw collar, the construction of which is described at the end of this paper. I soon found that this was of no service, for when the wound inflamed and became irritable, she contrived, from its being rather too large, to slip the chin within it. I therefore contented myself with applying a collar of pasteboard with a poultice underneath, and laid her head nearly on the same horizontal line as her body, till a smaller screw collar could be made. In the mean time suppuration was freely established, and the irritation of the wound having subsided I was enabled after a few days to apply this.

In the course of the cure this girl was attacked by measles, which somewhat delayed it; notwithstanding which, the sore healed in about four months. A similar period has since elapsed,

* It is generally necessary to set free the edges of the wound by little transverse cuts, which was done in this and the succeeding case.

during which, instead of any ground having been lost, I think the parts have given way still more, and the distance between the chin and sternum is now three inches and a half. The old cicatrix is perfectly concealed under the chin, and as she grows up I think very little trace will remain of this deformity.

CASE II.

Elizabeth Beal, aged thirteen. This girl was burnt four years since. The cicatrix was more extensive than in the last case, reaching as far as the lower edge of the second rib; it was exceedingly broad and dense on the thorax; and it was also very broad on the front of the throat, but less dense there than above or below. I did not measure the distance between the chin and the sternum prior to the operation, but I think it was hardly greater than in the last case. The head was tied to the thorax in the same unhappy manner, and the integuments of the face were slightly drawn down even when in the ordinary stooping position. The chin was also effaced in this instance.

May 4, 1824.—It would have been a dreadfully severe, and probably a much less serviceable operation, to have dissected off the whole of this immense cicatrix, and therefore I adopted the following plan: I made two incisions, one on either edge of the cicatrix, of about three or four inches;

I then pinched up the cicatrix in the middle between the finger and thumb of my left hand and drew it forcibly out; I next pushed a long, straight-backed, narrow knife through from one incision to the other, and turning its blade outwards, I at once divided the intervening band, making a cut of at least two inches with very trifling pain; I now freely detached both the flaps, until the girl could carry her chin horizontally without dragging the integuments of the thorax.

When the patient is refractory, as in the first case, it is by no means an easy matter or free from hazard, to dissect up the dense cellular substance from the subjacent parts, obscured as the operation is by very copious bleeding: and in truth, in that case, I was several times under considerable apprehension, notwithstanding the care of the gentlemen who assisted me, that she would have thrust her throat against my knife, which might have been an awkward business if the point had penetrated near the alæ of the os hyoides, where the cicatrix particularly adhered. In this case, therefore, I used a knife much rounded, the point being completely ground away. My present patient was, however, very tractable.

I proceeded as before to tuck the upper flap under the chin, and confined it in its situation by long straps, compress and broad fillet. Then, having dressed the neck below lightly, retaining the

lower flap in the situation to which it had been separated from the other (a distance of more than two inches), I applied a poultice, and over that a pasteboard collar; and I continued this plan for some days, until the chin was formed and suppuration established. I then substituted broad straps in front of the throat, for the pasteboard collar, and applied the screw collar with a short screw. By degrees we were enabled to raise the chin to the full extent of this screw, and have since substituted a longer one.

The result of this operation has been equally successful as the last; the chin is well formed, and the new cicatrix is soft and pliant. The girl can raise her chin without difficulty above the horizontal line, and the measured distance, without stretching the integuments, is three inches and a half. The neck has now been well sixteen weeks. In this case I continued a poultice in a bag over the other dressings nearly to the termination of the cure, and with advantage.

If we may judge from present appearances, there is every probability that the cure will remain permanent in both these cases, and I see no reason for thinking they will contract again. In the first place, the *old* cicatrices had contracted to the utmost, before the operation was performed. The

question is, will the new cicatrices contract? I cannot see why these should do so, otherwise than if they had been formed subsequently to the removal of tumours, or to any other breach of surface in the same situation. Such cicatrices *do* contract, but in most instances where the cause has not been a burn, the neighbouring integuments elongate so as to remedy this, of which I lately saw a very remarkable instance in a man whose eyeball with a part of the lids had been extirpated for a disease of that organ. When I saw him, there was a line of cicatrix at the bottom of the orbit, and the whole of that cavity was covered by an extension of the remaining portion of the eye-lids, which fact was satisfactorily proved by the following circumstance; that when he closed the lids of the sound side, simultaneous action of muscular fibres could be very clearly perceived in the integument lining the empty orbit. I cannot suppose that these were a new formation in this situation, but that in proportion as the interstitial matter of the cicatrix was absorbed, more and more integument was borrowed from the surrounding parts, which not improbably is produced more largely from the demand made for it.

How it is that cicatrices produced by different causes differ so much in their constitution, has not hitherto been satisfactorily explained; but at present it may suffice to say, what is sufficiently known indeed, that those which follow a severe burn are

peculiar; and it is one of their peculiarities to produce this species of contraction for which Mr. Earle has proposed as a remedy, to substitute a new cicatrix for it *. To return to the cases above related. From the soft, healthy state of the cicatrices, and from their having allowed the parts to recede still more since the wounds have healed, there is every reason to hope that the ground already gained will be preserved; but as a useful precaution, I intend these girls to wear their collars for a year or two, in which period another guarantee will be obtained against a relapse, namely, that the bodies of the vertebræ, which probably were narrowed in their anterior capacities during the action of these bands, will have recovered their natural dimensions, and thereby oppose any recurrence of the deformity. It would probably have been deemed more satisfactory to have deferred this communication till a longer trial had been made, but for the reason above stated this would have occasioned a greater delay, than with my firm belief of the permanence of the cure would have been necessary or right.

* Mr. Earle is of opinion that the advantage is derived from approximating the edges of the wound, and so obtaining a cicatrix in the transverse, instead of longitudinal direction, and this indeed appears to be the case; but where it happens (as it often will) that the edges can be approximated but in a very slight degree, I believe the same object will be obtained by the natural process now mentioned, if care be taken to maintain a proper distance in a longitudinal direction.

From these cases it will appear that the objects I have had in view are, 1st. To make a good chin. 2d. To conceal the old cicatrix in that situation without removing it. 3d. After the parts have been relaxed by suppuration, to separate the chin from the sternum by the gradual but sure operation of the screw.

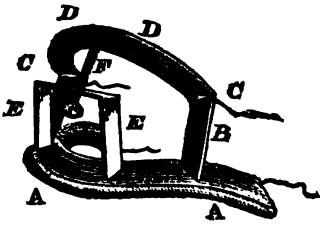
The collar, of which a sketch is annexed, executed by a very intelligent pupil of this hospital, Mr. Nelson, consists of the following parts:

A A An arch slightly curved, to adapt it to the form of the parts resting on the sternum and clavicle, and carried back far in the neck.

B B Two uprights with hinges at *C C* situated nearly under the angles of the jaw.

D D Another arch which is applied beneath the base of the jaw.

E E A steel frame which supports the upper arch, with a screw *F* passing through it, by means of which the upper arch may be elevated at pleasure.



I believe very complete success may be obtained from the operation, performed in the manner above described, if sufficient attention be paid to the after treatment, but without this its object may be defeated. It is more particularly necessary to prevent the collar from galling, and if it should bear on any part of the sore, it should be raised from the surface at that point, by thickening the padding elsewhere. Also, it is desirable to have the upper arch made with a curve not too large, for that might allow of the chin being withdrawn within it; nor should the frame *E E* be too high at first. A second collar may be used in the progress of the cure, or a new frame or screw may be added to the old one.

The material of which the arches are composed is sheer steel, sufficiently padded and covered with leather.

It is right that I should mention that my friend and colleague, Mr. Harris, has, since these operations have been performed, adopted an apparatus in a case which came under his care, which varies from mine in the following particulars. It retains the arch which supports the chin, and this arch rests upon an upright which also possesses the power of elevating that arch at pleasure, but this upright rests on a plate which is fixed as a belt to the lower part of the thorax, and is secured from slipping down by two shoulder-straps. It is not improbable that it may answer the purpose better

than the instrument I have described above, but as the case is still under trial, I can say nothing more than that it promises well; at the same time I should say that my own reason for adopting the instrument I have described, arose from the belief that the accommodating powers of the vertebral column would be likely to defeat our endeavours, and *therefore* I wished the fixed points to be the sternum, clavicle, and lower jaw *.

Under the impression that the foregoing cases possess sufficient value to justify me in making them known to the profession, I have been induced to offer them to the notice of this Society.

Exeter, Dec. 16, 1824.

* The first case I had was that of a girl of the name of Lee, about seven years old, on whom I operated Oct. 17, 1818. I then used the pasteboard collar, aided and assisted by every contrivance I could devise, but had the mortification of finding that my efforts to establish the distance between the chin and sternum, which I had gained by the operation, were defeated by the soreness of the parts if the width of that collar was increased, and by the great flexibility of the vertebral column if I used any species of bandage; and it was on that occasion I was first led to try the screw collar. This was not, however, till more than two months after the operation, and the cure in this case was far less perfect than in the two subsequent ones which I have now related.

CASE

OF

THE SIMULTANEOUS OCCURRENCE OF SMALL-POX AND MEASLES,

WITH

REMARKS ON MEASLES

AS IT PREVAILED EPIDEMICALLY AT EXETER IN 1824,

By PHILIP CHILWELL DELAGARDE,

SURGEON, EXETER.

COMMUNICATED BY DR. GORDON.

Read February 25, 1825.

EARLY last spring, measles appeared in Exeter. Few cases had occurred for a long period, and, consequently, its prevalence on this occasion was very remarkable. Children liable to its attack had accumulated, and of these very few escaped.

The ensuing observations were collected from a vast number of cases. One half, nominally, of the poor, were under my professional superintendance; but in the larger portion of my district, the streets are narrow, dirty, very populous, and

the inhabitants of the lowest description. The real proportion was therefore much more considerable. By the poor I mean, not merely paupers, but the labouring classes generally, and even the majority of inferior shop-keepers. If to these are united various other families whom I attended, my field of observation could not include less than a third of the entire population.

The disorder had little peculiarity. The catarrhal symptoms were mild; but the pectoral, especially on the subsidence of the eruption, were general and severe. Two cases only exhibited typhoid symptoms. These terminated favorably. Every fatal event resulted from pulmonary inflammation. It was reported that croup was frequently combined with the measles. The onlywell marked case which I observed, was prior to the eruption, and was speedily subdued by nauseating doses of tartarized antimony, blisters, and pediluvium.

The ordinary treatment consisted of small but frequently repeated doses of sulph. sodæ and antim. tart. If diarrhœa was excessive, nitre was substituted for the sodæ sulphas. When worms were suspected, or when fulness of habit was combined with costiveness, purgative doses of calomel were administered. Immersion of the feet in warm water was used more or less frequently, according to the violence of the pulmonary affection. Blisters were most strikingly beneficial, and were re-

peatedly applied on the chest and between the shoulders, until the pectoral symptoms were alleviated. In a few cases of unusual severity, mustard cataplasms to the feet were eminently serviceable, either in opposing inflammation of the lungs, or in rousing the system from extreme depression. Considerable perspiration, or a natural diarrhœa, restrained all unpleasant symptoms. Occasionally I tried phlebotomy, especially in adults. These cases succeeded, yet bleeding appeared but an inefficient treatment. A warm temperature and a rigid antiphlogistic regimen were carefully maintained.

The mortality has been represented as very great: indeed I know that in one day seventeen children were buried in one church-yard*. Among the poor under my care, the deaths were not quite as one in twenty-five. It is to be observed, that the majority of fatal cases were not shown me until the eruption had disappeared, and the condition of the pulmonary organs was utterly hopeless. In the remainder, the treatment recommended was only partially adopted; or, as on enquiry I frequently discovered, spirits and other violent stimulants were administered. Of those cases, to which I was called before, or on the earliest appearance of, the efflorescence, the fatality did not exceed one in seventy. In families, on whose discretion I could rely, the complaint, although se-

* In this city there are five church-yards, besides cemeteries for dissenters.

vere, was never uncontroulable. Several extraordinary cases presented themselves. Amongst these, two repetitions of measles. I have scarcely a doubt that these children had had the disorder before; for it was prevalent at the period when they were supposed to have had it, and others inhabiting the same house were infected. There is a very slight affection of measles, which it is generally believed will not prevent a recurrence; but these children had been visited by medical men of experience and ability, who declare their symptoms to have been highly characteristic. The complaint was not modified, as happens with small-pox after small-pox or vaccination. In each the fever was severe. This, I apprehend, corresponds with the result of experiments of inoculating with measles.

Of a case exhibiting the simultaneous occurrence and uninterrupted progress of small-pox and measles, I shall give the particulars.

John Brookes, a shoe-maker, residing in Ewing's lane, Exeter, had three children. Their respective ages were six years, four years, and seven months. The eldest had been vaccinated a year preceding my being called in; the second, a boy, the subject of this case, was unwell at that period, and vaccination in his case was subsequently neglected.

The elder child was attacked by measles, which,

on March 29th, 1824, disappeared. The case was well marked, but not severe. On the same day, the second child began to sicken. The catarrhal symptoms were stronger than usual*.

April 1st.—The eruption appeared; interspersed on the right cheek with a few minute pimples.

2nd.—Measles raspberry-tinted, distinct, and strong. The pimples were more numerous, and on a few there seemed small vesicles. The appearance of the face was inflammatory and singular.

3rd.—The measles turned. This day I could not personally attend. The usual pulmonary disorder was scarcely perceptible†.

4th.—The brown marbled spots, frequent after measles, appeared on the breast and arms. Amongst them were pustules, distinct, dimpled, enlarging, having florid bases, and becoming slightly opaque. I doubted not a combination of small-pox with measles. This day I conferred with an experienced medical friend, who, on inspection, coincided in my opinion.

* Measles, as it then prevailed in the town, was characterized by the mildness of its catarrhal, and the severity of its pectoral symptoms.

† The peculiar mildness of the pectoral complaints may perhaps be fairly attributed to the action maintained on the skin by the variolous pustules.

5th.—The pustules larger, full, completely opaque.

8th.—Pustules turning on the face.

10th.—Pustules turning on the extremities.

11th.—Crusts separating.

Such was the termination of this remarkable case. By those who saw it the genuineness of the disorders was not, nor indeed could, be suspected. I shall add, however, circumstances which corroborate my opinion.

Desirous of every test, I permitted some of the matter to be taken. A child was inoculated with it, and small-pox ensued.

On the 8th, the day on which the pustules turned, the infant, after a slight indisposition, was covered with the rubeolar eruption. On the 15th, having completely recovered from the measles, she became very feverish. Between this and the 20th, she had several convulsions. On that day small-pox appeared. The infant not having been near any other child with that disorder, it is thus proved, not only that the eruption was variolous, but that the fever was infectious.

Still the difficulty remained of accounting for

its origin, since no small-pox was known to prevail in the neighbourhood. The parents and neighbours could give me no clue. Soon afterwards I heard that a child had recently died of combined small-pox and measles. Unable to trace this report, I concluded it was merely an erroneous account of the present case. Calling, however, with Mr. Daniell on a female, one of his dispensary patients, she informed me that the child was her own. Of this case I can give no accurate narrative. The mother herself was dying, and the child had been visited by no medical attendant. Judging from her statement, I imagine the two disorders occurred in succession, not simultaneously. The child was taken ill some days before Brookes's, and certainly died of small-pox.

Yet even this was unsatisfactory, since the families lived at a distance from each other. No communication of the children was known, until I discovered that they had attended the same school, a circumstance of which their friends were mutually unconscious.

Bedford Crescent, Exeter,
January 22, 1822.

HISTORY OF A CASE

OF

HYDROMETRA

AND

DRY GANGRENE

OCCURRING

IN THE SAME INDIVIDUAL,

WITH SOME OBSERVATIONS ON THESE DISEASES.

By ANTHONY TODD THOMSON, M.D. F.L.S.

SURGEON TO THE CHELSEA AND BROMPTON DISPENSARY, &c.

Read June 14, 1825.

THERE is much truth in the remark that singular and extraordinary cases are seldom instructive; but, if any practical inference can be drawn from them, they should, undoubtedly, be recorded; and, in this respect, I trust the details of the following case, in which two diseases of rare occurrence appeared in the same individual, at the same time, will not be uninteresting to the society.

Mary Rae, aged sixty-five years, was admitted

as a patient, into the infirmary of the Chelsea workhouse, under the care of Mr. Gaskell, the Parochial Surgeon, on the first of April, 1823. She was a widow, her husband having died insane in 1819, up to which period she was of temperate and industrious habits, and enjoyed good health; but, on the death of her husband, she became intemperate in the use of spirituous liquors, and a martyr to rheumatism. She had married early in life, and it is important to know that she had borne two children. The symptoms under which she laboured, at the time of her admission into the infirmary, were those of acute Rheumatism, affecting chiefly the knees and ancles. The degree of fever was considerable; and, being a woman of sanguine temperament, she was confined to bed, freely bled and purged, and kept on low diet. She took as medicine, the Colchicum, both in substance and in its vinous preparation; and occasionally the oil of Turpentine: under which plan of treatment she was so much relieved, in two months, that she was discharged convalescent. She did not, however, recover her strength; and having probably returned to her former habits of intemperance, her health became again so much impaired, that five months afterwards, viz: early in December, 1823, she was re-admitted into the infirmary of the workhouse.

She appeared, now, somewhat emaciated; and complained of uneasiness and pain, connected with

a tumour in the abdomen, which she informed Mr. Gaskell she had first perceived about six weeks prior to her admission into the infirmary in April, although, from a sense of delicacy, she had not mentioned it at that time. It was situate in the lower part of the abdominal cavity, rising, as it were, out of the pelvis, and occupying the iliac, hypogastric, and umbilical regions. She appeared as large as if six months gone with child. An indistinct fluctuation was perceptible in the tumor, and the least pressure on it excited pain. It was suspected to be a diseased ovarium; but no examination was made per vaginam; nor could it be ascertained, from the account which the patient gave of its origin, whether it had, at first, appeared on either side of the abdomen. The accompanying symptoms however, denoted a greater derangement of the system than usually attends Dropsy of the ovarium. These were, want of appetite, considerable nausea, furred tongue, the pulse quick and feeble, the bowels irregular, and the urine scanty and high coloured. It was deemed expedient, that she should be again confined to bed, and put on a vegetable diet. Mercurials were prescribed so as to affect the mouth slightly; the bowels were kept open; and leeches and blisters were alternately applied on the abdomen over the tumor. By these means its increase was arrested; but the sensation of pain, on pressure, remained unabated.

Matters proceeded in this manner until the middle of January, 1824, when the left foot was discovered to be affected with dry Gangrene, which gradually extended nearly to the knee. I was now requested to see the patient. I found her in the state which has been described. The diseased foot and leg were much shrunk, and appeared more like parts of a mummy than of a living being: or, as if a dark brown, or blackish leather stocking were drawn over the limb of a skeleton; the whole being thin, dry, and harsh to the touch, and the natural divisions between the toes nearly obliterated. Although the state of the woman's health was not favourable for amputation, yet, as a feeble but distinct pulsation could be felt in the popliteal artery, and a line of separation between the diseased and the sound parts of the leg was fully formed, I concurred in opinion with Mr. Gaskell that the removal of the limb afforded the only chance of preserving her life. The operation was delayed, however, in consequence of the reluctance of the patient to submit to it; but it was at length performed on the 29th of February, four inches above the knee. Very little blood was lost, and every thing appeared to be doing well until the third day, when the strength of the patient suddenly sunk, and she died on the evening of that day.

Before proceeding to detail the appearances on dissection, it may be proper to describe the state

of the amputated limb. Its external aspect has been described. On cutting through the integuments, the parts beneath, cellular matter, muscles, ligaments, and blood-vessels, seemed changed into one undistinguishable ash-coloured mass, not unlike the internal texture of some of the dry vegetable Fungi. In several parts, however, this was mixed with a semifluid matter. I endeavoured to trace the arteries, by injecting them from the sound part of the limb; but the line of separation was so complete as to render that attempt abortive.

DISSECTION.

The first object which presented itself, on the abdominal parietes being divided and turned aside, was a body closely resembling the gravid uterus, occupying the whole of the pelvic cavity, and the greater part of the abdominal. Upon its anterior surface, and firmly adhering to it, was the urinary bladder, containing a small quantity of deep coloured urine. On laying the flaps of the abdominal parietes together, the stretched bladder was found to extend within an inch of the umbilicus; so that it must have been perforated, if the trochar had been employed to evacuate the fluid during the life of the patient, under the supposition that the disease was Ovarian-dropsy. The tumor was immediately ascertained to be the uterus, greatly enlarged and filled with fluid. It was partially sphacelated in its peritoneal covering, on the upper portion or fundus.

With regard to the other viscera, the liver was much diminished in size, and adhered to the diaphragm throughout: the gall-bladder was large, and turgid with deep coloured bile: the stomach, colon, and other intestines, with the omentum, were glued together in many places, and, in some, were in an evident state of sphacelation. This gangrenous appearance extended to the peritoneum, in the hypochondriac region. On removing the diseased uterus from the body, and making an incision into it, the quantity of fluid which it contained was found to measure eight quarts. It was of a dark brown colour, and coagulated slightly when heated in a spoon over the flame of a candle. The existence of a large hydatid within the cyst was suspected; but this opinion was incorrect, the sac being merely the uterus, in the cavity of which the fluid was contained. The internal surface of the organ was not more irregular nor more spongy than in its natural state, but none of the orifices could be found, for even the os uteri, was interiorly, as *completely obliterated as if it had never existed;* and although its situation could be traced in the vagina, yet even there it was very faintly marked. The ovaria were small and flaccid, but otherwise natural.

On examining the state of the larger blood-vessels within the abdomen, in reference to the diseased limb, the aorta was discovered to be ossified about two inches above its division into the iliac

arteries. The right iliacs were in a healthy state; but the left external iliac was ossified in several places, in some of which the bony portion embraced nearly the cylinder of the vessel. The ossific matter appeared to be deposited between the innermost and the second coats of the vessels. No traces of ossification were observed in the course of the femoral artery, and, as has been already stated, this vessel pulsated in the ham, although the lateral vessels, the muscular and articular arteries, which are given off from the popliteal artery, were shrunk and nearly obliterated.

It is probable that both the diseases under which this unfortunate woman laboured, originated from the same remote cause, the intemperate use of spirituous liquors. The examination of the body suggested a few physiological and pathological remarks, which I will now take the liberty of laying before the Society, in the hope that they may prove useful in a practical point of view.

In many of the cases of dry gangrene recorded by authors, the arteries leading to the diseased limb, besides being ossified, have been choked up with coagula*, which, impeding the supply of

* Vide Professor Avisard's cases in the Bibliothèque Medicale, for June, 1819.

blood to the extreme vessels, readily explains the death of the limb: but, in other instances, as well as in that which I have described, no obstruction by coagula was discovered in the larger arteries above the diseased part, although, in all, there appears to have been ossification. From this fact, may it not be inferred, that the presence of the coagula was the consequence of the ossification; and that this diseased state alone, when extensive, is sufficient to induce dry Gangrene? A physiological question here suggests itself. How does the fact, that the ossification of the arterial trunks impedes the circulation so much in the extreme vessels, as to occasion the death of the limb, accord with the opinion, that the circulation is carried on altogether by the power of the heart, and that the arteries have no influence whatever in propelling the blood? If we admit the opinion that the arteries are passive tubes, we must, also, admit, that the propelling power of the heart should be sufficient to carry the blood forward to its extreme limit, even if the arteries were ossified through their whole extent? But, in the case before us, we find, that the simple ossification of a small portion of the aorta, and of several portions of the external iliac artery were sufficient, independent of the formation of coagula in these vessels, so to impede the supply of blood to the limb of the affected side, as to occasion its death. This is a subject, to the consideration of which, I must confess, my attention has not been much directed; but I am dis-

posed to think, that the state of the vessels, in the case before us, furnishes a strong argument against the accuracy of the hypothesis to which I have alluded.

It is a curious fact, that many of the recorded cases of dry Gangrene, besides that which is now under consideration, have occurred in gouty or rheumatic individuals*: and, even in some instances in which this is not particularly stated, a similar diathesis probably existed. Thus, in a case communicated by Doctor Alix, of Altenburg, and quoted by Doctor Mason Good†, there was at first, pain and evident inflammation in the arm, the whole of which was afterwards affected with dry Gangrene, and a year after the appearance of that disease in the limb it separated spontaneously at the shoulder joint, leaving the patient, a man of seventy years of age, in good health. May we not infer from these cases, that the exciting cause of dry Gangrene is an inflammatory state of the vasa vasorum of the larger arteries, resembling that which occurs in the extreme arteries in gout and rheumatism, occasioning the deposition of osseous matter between their innermost and second coats; and, thence, diminishing or destroying that vis a tergo, the existence of which is necessary to be main-

* Vide Morgagni de Sed. et Causis Morb. Lib. iv. Epist. lv. § 24, et seq.

† See Study of Medicine, vol. ii. p. 919, first edit. and Observata Chirurgica, Fasciculus 1. 8vo. Altenburg, 1778.

tained in these vessels for furnishing a due supply of blood to the extremities? Were the truth of this conjecture proved, it would certainly assist us in checking the progress of dry Gangrene, even after it has commenced in a limb, which has, hitherto, not been accomplished. But it is asserted, that the disease occurs when no inflammation exists. On this point I am sceptical; and would rather believe, that the inflammation may have been so obscure as to have escaped observation, than that it had not existed previous to the appearance of the gangrene.

Although the case before us terminated fatally soon after the amputation, yet I am not disposed to think, that the death of the patient was hastened by that operation, but by the morbid condition of the abdominal viscera. The operation was authorised by the pulsation in the popliteal artery, and the formation of a line of separation between the living and dead portions of the limb. These circumstances, indeed, are the only guides by which we can judge of the propriety of amputating in dry Gangrene, as they afford some reason for believing, that the yet living portion of the limb may be nourished and preserved. On the contrary, what benefit can be expected from that operation, when no line is formed, and no pulsation is perceptible in the larger vessels? In such a case, we may suspect that the principal artery which supplies the diseased limb is actually choked up,

and the supply of blood, nearly, if not entirely, cut off; and by removing the dead portion, under such circumstances, we cannot expect to arrest the progress of decay in the part which is left.

The other disease of the individual whose case is now before the Society, is still of rarer occurrence than dry Gangrene; for, although several instances of water collected in the cavity of the uterus have been recorded, yet, very few of these can be regarded as cases of Hydrometra, in what may be termed its pure and unmixed state. Bonetus* gives the history of a case in which the uterus was enlarged to such an extent, that, to use the words of the author, "puer decem annorum facile potuerit in eo delitescere." The os uteri was closed by a round tumor, the size of a pomegranate, which was composed of a tenacious white concrete matter, resembling gluten. Hartmann† describes a case in which the mouth of the uterus was, also, stopped up by a swelling, the size of a goose's egg; and another, approximating in some degree to our case, in which he says, "orificium uteri in solidum ligamentum impervium degenerat"‡; but the fluid, in this instance, was contained in two cells which did not communicate with one another.

* Anatomia Practica, lib. iii. sect. xxi; obs. lv. § 8.

† Miscellanea Cur. Acad. Naturæ Curiosorum, Dec. 2. Ann. 1686. Obs. 67.

‡ Ibid Obs. 68.

In a case dissected by Monro*, the os uteri was swollen, knotty and scirrhous. Other cases are detailed in the collections of Haller, Borellus, and Lieutaud, Loder's Journal of Medicine, and the works of several other writers †: but the case which most resembles ours, although greatly exceeding it in the quantity of fluid contained in the uterus, which has fallen within the course of my reading, is one described by Vesalius ‡, in which the os uteri was firmly grown together, and the uterus contained one hundred and eighty pints of watery fluid.

Some modern writers, however, among whom is Doctor Denman, have doubted altogether the existence of pure Hydrometra. A case which came under the notice of that celebrated accoucheur, terminated by the spontaneous discharge of the water per vaginam, followed by a membranous bag, which, being inflated, assumed the figure of the distended uterus. He, therefore, concludes, "that what has been called dropsy of the uterus, is probably no more than one large hydatid"§. It cannot be denied, that a large hydatid may distend

* See his Collected Works, 4to.

† Those who are desirous of investigating this subject, may consult, for references, to recorded cases, Voigtel's Handbuch der Pathologischen Anatomie, vol. III. or Plouquet's Litteratura Medica.

‡ De Corp. Hum. Fabrica. lib. v. cap. 9. p. 627.

§ Introduction to Midwifery, vol. I. p. 119.

the uterus, and put on the character of pure Hydrometra: but, it is equally certain, that water may be accumulated in the cavity of the uterus, independent of the presence of any hydatid, as illustrated in the uterus now on the table of the Society.

The exciting cause of dropsy of the womb is not very obvious. Some authors refer it to whatever closes the os uteri, which, according to Astruc*, may be effected by any of the three following circumstances:

"1. Par obstruction, lorsque quelque matiére mucilageneuse qui coule de la matrice, s'y arrete, et s'y epaissit jusqu'a y demeurer collie.

"2. Par compression, lorsque l'orifice de la matrice est pressé par quelque tubercule squirrheux, ou par quelque callosité, qui s'y est formée à la suite de quelque accouchement laborieux.

"3. Par constriction, lorsque cet orifice est fortement resserri par quelque contraction convulsive, comme il arrive souvent dans la passion hysterique."

He might have added, as a fourth cause, by such a degree of inflammation as completely obliterates the os uteri. Hartmann, speaking of the case he

* Des Maladies des Femmes, liv. 2. p. 387.

describes, also remarks,—"Hydropis uteri prima causa in hac, constrictio orificii aut colli uteri"*: and it is very evident that no accumulation of fluid can happen in this organ, unless the os uteri be either entirely obliterated, as in the case before us, or otherwise obstructed. These conditions of the orifice of the organ, however, merely explain the mechanical means by which the fluid is retained in the distended uterus, but throw no light on the causes of its production.

In the unimpregnated state of the uterus, the internal surface or cavity is necessarily kept moist by an exhaled fluid; but, as we have no observations which prove that this fluid escapes into the vagina, we must conclude that, like the exhalations into the other cavities of the body, it is taken up and carried away by the absorbents. A due balance of the action of the exhalants and the absorbents is necessary, therefore, for maintaining that quantity of this fluid which is required for the purposes of the organ; and we may reasonably suppose, that this proportion would be preserved, were the orifice closed by any means whatsoever, provided the health of the uterus itself remained unaffected. Some authors have therefore sought to ascribe the collection of the fluid to other causes. Thus Carron, quoted by Dr. Good†, ascribes it, in

* Loco citato. † Study of Medicine, vol. IV.

various cases, to a debility of the uterus produced by a chronic leucorrhœa. Others have imagined, that it may arise from the stimulus of pent-up coagulated blood; and Doctor Baillie, without adverting to the state of the organ, thinks it is probable, "that the fluid resembles in its properties the serum, and is poured out by the small curling arteries of the uterus"*.

Were debility of the uterus the cause of the accumulation of water in its cavity, admitting that the quantity poured out by the exhalants is sufficiently great to produce the distention which occurs, and that the absorbents are paralyzed, or otherwise rendered incapable of taking it up, we should expect to find the sac thin in proportion to its size. It is evident, however, from the appearance of the paries of the enlarged uterus before us, that it was not mere distention, by the pressure of the fluid which it contained, that enlarged it; but, that the increase of bulk has arisen from some new action in the vessels of the part. Is it more difficult to suppose, that the increments of growth in the uterus, in its dropsical state, results from the diseased action which causes the preternatural increase of its fluid, than in a similar morbid condition of the ovarium, which, from being in its healthy state, an insignificant body in point of size, becomes a strong, thick, membranous sac,

* Morbid Anatomy.

capable of containing several gallons of water? Judging from the manner in which the os uteri is closed, in the case before us, it is probable, that in some instances, the new action is of an inflammatory kind, and if we may support our opinion by analogy, we know that water is effused into the ventricles of the brain, and other cavities supplied with a moist exhalation, from the same cause. With respect to the opinion that the disease may proceed from the stimulus of pent-up coagulated blood, we need only remark, that moles and other collections of blood are occasionally found in the uterus, without the presence of any dropsical effusion.

The greater frequency of ovarian dropsy, and the difficulty of the diagnosis, without an examination per vaginam, may have, occasionally, led practitioners to mistake uterine dropsy for that disease; and, in some of the instances of recorded dropsy of the ovarium, which were relieved by a spontaneous discharge of the fluid by the vagina, I am inclined to think that the water was contained in the cavity of the enlarged uterus. Such was probably the case in the curious instance mentioned by Johannes Benedictus Grundelius, which occurred in the person of a Hungarian Countess, in 1698, who supposed herself pregnant, as the menstrual discharge was suspended, and a tumor appeared in the abdomen, which gradually increased in size. In time, however, no movement of a child being

felt, and falling into bad health, she was induced to use warm baths, when, having pursued this course for eight days, the orifice of the uterus was opened, and, adds the narrator, "magna humoris fœtidi suburra unà cum copiosis flatibus ex utero evacuato": after which she perfectly recovered, and was, subsequently, the mother of two children. In a case which came under my own observation, an unmarried woman of libertine habits, supposed that she was pregnant, and gradually increased in size during eleven months. No motion of a child was however perceptible; there was an evident fluctuation of the tumor when she applied for my advice, and believing that it was ovarian dropsy, I proposed to evacuate the fluid by the trocar. She would not, however, consent to the operation, and a short time afterwards was suddenly relieved by a discharge of fluid per vaginam. She has since continued in good health. A similar case occurred, I am informed, in the practice of the uncle of the present Doctor Merriman: and in a letter which I received from my learned and excellent friend, Doctor John Thomson, of Edinburgh, is the following paragraph. "I have myself seen two cases, and I have heard of more from my acquaintance, in which great quantities of water have been periodically discharged from the uterus during many months: but, whether the water was formed in that viscus, or came from the ovarium, I have not been able to ascertain. In one of the cases to which I allude, the patient is

still alive; and I have ascertained both by examination per vaginam, and by the rectum, that she has a disease of the neck of the uterus." These spontaneous evacuations of fluid, suggested the plan of curing the disease by paracentesis, but few cases are on record, in which that operation was actually performed.

In conclusion, we may perhaps be permitted to suggest the following corollaries:

1. That in incipient cases of dry Gangrene, when the exciting causes are not obvious, benefit may be derived from treating them in the same manner as cases of gouty or rheumatic inflammation; in addition to the local stimulants usually employed: i. e. with Calomel, Tartar-emetic, Opium, Colchicum, and Peruvian bark.

2. That pure Hydrometra, or an accumulation of a serous fluid in the cavity of the uterus, enlarged, and acquiring the character of a membranous sac, is a disease which occasionally occurs.

3. That in no case of supposed ovarian dropsy, should a trocar be passed into the tumor, through the linea alba, without ascertaining by previous examination per vaginam the real nature of the tumor. For, as in the case before the Society, should the uterus be the seat of the disease, and the bladder of urine be attached to its anterior surface,

and drawn up nearly to the umbilicus, the instrument would pass through that viscus, and might produce irreparable mischief.

4. That the number of instances in which the disease has been cured by a spontaneous discharge of the fluid per vaginam, authorize the attempt to evacuate it artificially, either by dilating the os uteri, when it is only obstructed, or puncturing the sac, in the situation of that orifice, when it is obliterated.

CASES

OF

DESTRUCTIVE INFLAMMATION

OF

THE EYE,

AND OF

SUPPURATIVE INFLAMMATION OF THE INTEGUMENTS,

OCCURRING IN THE PUERPERAL STATE,

AND APPARENTLY FROM CONSTITUTIONAL CAUSES.

By MARSHALL HALL, M.D. F.R.S. Ed.

AND

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COMMUNICATED BY DR. FARRE.

Read March, 1825.

IT has occurred to us to witness together, at distant periods, the progress of several cases of the singular morbid affection about to be described: and if the disease be as little known to the profession generally, as it appears to be in this populous town, an account of it cannot fail to be interesting to the members of the Society.

The affection has occurred, in the cases to which

we have alluded, from five to eleven days after delivery. It has always been preceded by some serious indisposition : in one case there were all the well-marked symptoms of intestinal irritation, and of exhaustion from uterine hæmorrhagy ; in a second there was continued and protracted diarrhæa ; and in the others much fever, with derangement of the functions of the bowels. In one case the patient had been bled ; in another calomel had been freely given ; in a third opium ; and in a fourth the spt. terebinthinæ. In these respects all the cases were dissimilar. In one remarkable circumstance, however, they all concurred ; the left eye, and not the right, was always the one affected. It may be remembered as a possible cause of this fact, if indeed it be not accidental, that patients are always delivered lying on the left side.

In one case the eye was affected but a day or two, and but slightly, when the patient died. In two there was great chemosis, the transparency of the cornea was destroyed, and the eye appeared collapsed, during life; and in a fourth the patient survived the ulceration and sloughing of the cornea, the total destruction of the organ, and the subsequent healing of its anterior part.

Soon after the appearance of the disease in the eye, there has also appeared a local inflammation situated in the integuments, and first observed on

the hand, but found, on a careful examination, either at the same time, or soon afterwards, on the inferior as well as superior extremities. In one of the cases only, there was no such cutaneous inflammation; but the patient having been bled, there were inflammation and suppuration of the vein. In two of the cases the cutaneous inflammation was observed on the hands and feet, rather diffuse and little elevated, but extremely tender to the touch; in the fourth, that in which the patient survived the loss of the eye, the patches of inflammation were very numerous and extensive, and led to equally numerous and extensive formations of pus.

All remedies appeared to be unavailing. Early bleeding, mercury, and purgatives, and afterwards bark and opium, were fully tried without effect. The sinking of the vital powers alone appeared to suspend the course of this terrible disease.

From the preceding observations it may be conjectured that this morbid affection has a constitutional origin. This inference seems warranted by all the patients having previously experienced some indisposition, chiefly a deranged state of the function of the bowels, and by their all suffering from more than one local disease at the same time.

We have reserved the more particular description

of the morbid appearances observed in the eye and in the integuments, to be detailed in the individual cases. Although these are only five in number, they present great variety. This variety appears chiefly to have arisen from the state of the vital powers, the morbid action in the part being influenced by the strength of the patient. Thus, in the patient who died soon after the appearance of the affection of the eye, the disease presented itself in a slight, although a very characteristic form; whilst in the patient who survived the total destruction of the organ, it pursued a regular progress, and assumed the most marked character.

CASE I.

Mrs. A. aged 23, of a delicate constitution, was delivered after a natural labour, on the 27th of October, 1823. Before the time of her confinement she was affected with continued diarrhœa, for which she took occasionally a dose of rhubarb. On the ninth day after delivery, an affection of the left eye was first observed; red vessels were seen proceeding across the conjunctiva, and converging towards the cornea; the pupils were extremely contracted, and there was great intolerance of light.

On the succeeding day the course of the enlarged vessels was completely obscured by great

tumefaction of the tunica conjunctiva; the transparency of the cornea was somewhat lost, the pupil enlarged; the pulse was very frequent.

On the third day of this disease the chemosis, or tumefaction of the conjunctiva, was greatly augmented. Large red vessels were observed passing in all directions; the cornea was still more opaque, uneven on its surface, covered with a film of mucus, sunk in the chemosis, and surrounded by a ring of ulceration about a line in breadth, and covered with white pus. The pupil was still more enlarged, but seen obscurely through the opaque cornea; there was still intolerance of light; and the vision was very imperfect. The eye-lids were greatly swollen, partly perhaps from the application of leeches; the pulse 144.

On the fourth day the eye was nearly in the same state; the pulse was only 120, and the patient expressed herself as feeling much better.

On the morning of the fifth day the pulse was 100, in the evening 120. During the night there had been slight delirium; the chemosis was less, the ulceration round the cornea greater, the cornea more opaque, uneven in surface, and irregular in form; the pupil could not be distinguished. A little pus was observed in the lowest part of the anterior chamber; there was less appearance of mucus over the eye.

On examining the eye in the gentlest manner on the sixth day, the cornea gave way, and the aqueous humour and crystalline lens escaped and flowed down the cheek. The chemosis now subsided, and the remaining portion of the cornea collapsed.

In a day or two afterwards chemosis increased, and there occurred great pain, redness and tumefaction, and complete closure of the eye-lids. This again subsided, and when the eye-lids could be separated, the eye-ball appeared of a brownish hue, the space previously occupied by the cornea presenting the appearance of a white ulcer. In the course of a week or two the swelling totally subsided, the conjunctiva became white, and the ulcer healed.

About the second day of this affection of the eye, the wrist and arms became affected in five distinct points by a diffused redness and great tenderness. In the course of a few days suppuration took place, and each part required to be opened by the lancet. Afterwards most copious suppurations took place in the integuments in different parts of the surface of the body, along the thigh and legs, in the axilla, and above the clavicle. These suppurations eventually exhausted the patient, and she died in a state of extreme feebleness and emaciation.

This patient took opium for the diarrhœa, was bled and took mercury in the beginning of the affection of the eye, and afterwards had cinchona and wine.

CASE II.

Mrs. B. aged 27, of the sanguineous temperament, was delivered after an easy labour, and without much hemorrhagy, on the 13th of November, 1823. On the second day after delivery, she became affected with fever and derangement of the bowels, which continued but with varying degrees of severity until the eleventh, on the morning of which day a slight redness of the left eye was observed, occupying and being confined to the external canthus. At the same time a slight blush of redness was observed first on the back of the right hand, and afterwards along the ulna. In the evening the eye was affected with slight chemosis, the conjunctiva protruding in a loose flabby state, and with scarcely any redness. On the succeeding morning all the morbid appearances were augmented; the chemosis was extensive, but the conjunctiva was loose, flabby, and pale rather than red; the cornea was clear, but covered with a slight film of mucus; there was no appearance of ulceration at the junction of the cornea with the tunica conjunctiva; the eye-lid was very slightly swollen; the pupil not contracted. The inflamed parts of the hand and arm were extremely

red and painful, with perhaps a slight fluctuation over the ulna. There was also a little redness and swelling on the outer side of the right ancle, perhaps arising from pressure. The patient was at this time evidently in a sinking state, and did not survive long.

It will be plain, on contrasting this case with the preceding and succeeding ones, that the disease of the eye was arrested in its progress by the failure of the energies of the constitution. The remedies employed were principally purgative medicines, calomel, and the spiritus terebinthinæ, in full and repeated doses.

CASE III.

Mrs. C. aged 30, and delicate, was delivered on the 20th January, 1821, after a tedious labour, during which it was deemed necessary to take away fourteen ounces of blood, in consequence of rigidity of the os uteri.

On the morning of the 21st, she was seized with much shivering, followed by great heat, sickness, and frequency of the pulse. An injection and opening medicine evacuated much hardened fæces, and afforded great relief. In the evening, however, there was great heat, restlessness, slight delirium, and head-ache, with faintishness on attempting to sit erect. On the 22nd and 23rd,

the symptoms were much the same, but on the latter day there appeared some inflammation in the course of the vein from which she had been bled. On the 24th, 25th, and 26th, the general symptoms were less severe, but the inflammation pursued its course along the vein. On the morning of the 27th, the eighth day from delivery, there appeared slight inflammation of the left eye, which increased during the day. The inflammation of the vein increased rapidly, being attended by pain, tenderness on pressure, swelling, and a watery discharge from the punctured orifice. Amongst other remedies calomel and opium were given every three hours, and ice was applied locally. On the 28th, the conjunctiva was much tumefied, and the cornea somewhat opaque. On the 29th, the cornea was still more opaque and sunk in the swollen conjunctiva. On the 30th the eye appeared to have burst, the cornea being still more sunk and shrivelled; the arm and axilla were much swollen; the patient was evidently sinking, and she died in the night.

No examination of the body could be obtained.

CASE IV.

Mrs. D. aged 40, deformed, habitually weak, and subject to dyspnœa on any exertion. She was the mother of several children, and had suffered much in every pregnancy from increased difficulty

of breathing (being obliged to raise herself upright in bed, to prevent a sense of suffocation), and from œdematous swelling of the legs. Her nights were generally restless, and she was in the habit of taking the black drop to procure repose.

On the 15th of Nov. 1822, she was delivered of her fourth child, after a difficult labour, requiring the use of instruments, and attended by considerable hæmorrhagy. Her delivery was followed by great exhaustion and great frequency of the pulse, but did not occasion syncope. On the 17th she complained of much heat, and of pain of the head with noise in the ears, and the pulse was very frequent. Purgative medicine and an enema were prescribed, an anodyne draught was directed after the bowels should be well opened, and a liniment was applied to the abdomen. From the 18th to the 22d the symptoms were nearly the same; heat of surface, frequency of the pulse, violent pain of the head, and sometimes slight delirium. On the evening of this last day she ate two eggs and took some wine, contrary to a strict injunction. On the 23rd, the eighth day after delivery, she began to complain of pain of the eye, and on examination the conjunctiva was found inflamed, and there was a constant flow of tears; there was more delirium and more pain of the legs. On the 24th the conjunctiva was swollen, the pupil enlarged, and the cornea somewhat opaque. On the legs several streaks of redness were observed, attended by

much sensibility and pain. She complained much of the head, and the pulse was 150 or 160. On the 25th the conjunctiva was still more humid, the cornea more opaque and apparently sunk; the vital powers were evidently sinking fast, and the fatal event occurred in the evening, on the third day of the affection of the eye.

CASE V.

SINCE the preceding cases were transmitted to the Society, we have been called to witness the course of a fifth example of this fatal malady: and as it differed from the rest by a still more early sinking of the vital powers, and consequently by a less marked form, we think it right to append it to them.

Mrs. E. aged 22 years, was delivered after a rather lingering labour of sixteen hours duration, on Wednesday night, May the 25th, 1825. The succeeding day was passed without any symptom of complaint; but the patient had exerted herself far too much in seeing visitors, and care of the infant.

Early on the Friday morning she was taken with shivering, which was followed by profuse perspiration and a rapid pulse. The bowels were freely moved, and were in the most healthy state, having been particularly attended to during the whole of her pregnancy. The perspiration gradually sub-

sided, but on Saturday morning the pulse still remained at 120, and the abdomen was rather full, and painful, and tender under pressure, on the right side. These appearances of abdominal affection were, however, entirely subdued by the application of leeches, and by again evacuating the bowels. In the evening, and on Sunday morning, there was no tenderness or fulness of the abdomen at all, but the pulse remained frequent, though less so than on the preceding day.

In the evening of Sunday the pulse became more frequent, and the abdomen again tumid, and two red tender spots appeared in the inside and fleshy part of the left fore-arm. Very early on the Monday morning the pulse was found to be still more frequent, and the abdomen more tumid, while the vital powers were evidently failing. The bowels had been evacuated during the night freely and without uneasiness by the spiritus terebinthinæ. The arm remained as before. About eleven o'clock a. m. the left eye was observed to be inflamed, and the tunica conjunctiva to be red and tumid. The state of sinking increased rapidly, and the patient expired at one.

POSTSCRIPT.

In conclusion we beg leave to give the following short account of a case of this morbid affection

by Mr. Ward, surgeon, of Ollerton, in this county. Mr. Ward observes, "about eighteen years ago I was requested to visit the wife of William Aikin, of Eakring, aged 36, who had been confined about a week. Her labour had been tedious, and much hæmorrhagy followed the extraction of the placenta. She had complained of great pain of the head and eyeball for several days. She had taken opening medicine which acted well. On inspecting the eye I found that it had already burst, that its humours had escaped, and its coats collapsed; leaving only the appearance of a thick white substance on its anterior part. In addition to this affection of the eye, there were two large abscesses, one situated in the left axilla, the other above the calf of the left leg, which on being opened discharged much sanious matter. The patient was in a state of stupor, quite insensible to any object around her. I prescribed the cinchona with camphor, and port wine in gruel. In a few days diarrhœa came on, and soon afterwards the patient expired."

The first case detailed in the preceding pages was visited by Mr. John Wright, the eminent surgeon of this place. It has neither occurred to that gentleman nor to some others to whom the subject has been named, to have met with any other example of a similar puerperal disease.

Nottingham, July 1, 1825.

CASE

OF

EPILEPSY,

ATTENDED WITH

REMARKABLE SLOWNESS OF THE PULSE.

BY WILLIAM BURNETT, M.D.

MEMBER OF THE ROYAL COLLEGE OF PHYSICIANS; PHYSICIAN IN ORDINARY TO HIS ROYAL HIGHNESS THE DUKE OF CLARENCE; AND HONORARY FELLOW OF THE IMPERIAL MEDICO-CHIRURGICAL ACADEMY OF ST. PETERSBURGH, ETC.

COMMUNICATED BY

DR. JAMES JOHNSON.

Read April 13th, 1824.

AN officer of the navy, aged about forty-six, who had served much at sea in different climates, experienced about sixteen years ago, a single attack of epilepsy, from which time, till about four years preceding the present period, there was no recurrence of the disease; he then, however, had another attack while in bed, and, in consequence, fell out on the floor. From this time till August, 1820, he enjoyed good health, but, on the 23d of that month, I was requested to visit him, and though on this occasion I had no opportunity of

seeing him during any of the paroxysms, I had every reason to conclude, from the symptoms mentioned, that the disease under which he laboured was epilepsy, which, by moderate blood-letting, both local and general, purgatives, and light tonics, together with small doses of the pil. hydrargyri, I soon succeeded in checking. He remained quite free from complaint till the end of January, 1821, and appeared to have regained his usual health. Indeed on the day preceding his attack on this occasion, I met him while on my road to visit a patient in the country, driving his chaise, and looking remarkably well.

On the 27th of January, I was again requested to visit this patient, and found him labouring under all his former symptoms, having suffered many paroxysms. Indeed, they were now so frequent that, in the space of half an hour, while I was with him, he had four or five attacks. During the paroxysms he exhibited all the usual symptoms of epilepsy; yet these were of very short duration, sometimes lasting only a few minutes, and never being followed by a disposition to sleep. They were commonly preceded by nausea, and a sensation as if something arose in the stomach, and proceeded upwards to the head. Occasionally the nausea proved very troublesome, and was accompanied by vomiting even when the fits did not come on. The same plan of cure was pursued as on the former occasion, with the addition of the tinct.

valerianæ ammoniata. A seton was inserted in the nape of the neck; great attention was paid to the regulation of his diet and the state of his bowels, and the disease soon ceased.

About the latter end of April or beginning of May, I was again called upon to visit him, and found the paroxysms had been slighter, and not so frequent, but he complained of great uneasiness and distention about the epigastrium, which some purgatives he had previously taken had failed to remove. He also complained of dyspnœa, which frequently made it necessary for him to sit up in bed; and, on examining his pulse, I found it to beat only thirty-six in the minute, but it was regular and small. On the following morning the pulse was only beating twenty in the minute, but, in the evening, it got up to 32, and from this time till the 6th of May, it varied from 28 to 56, but was generally under the latter number, though without any return of the paroxysm.

For this attack he took purgatives; and a blister was applied to the epigastrium. I likewise prescribed light tonics combined with preparations of humulus and carbonate of ammonia. A few ounces of blood were taken from between the shoulders. He took also the oxyd of zinc with extr. anthemidis, under the use of which remedies the paroxysms ceased, and he regained a fair portion of health.

Soon after this I advised his proceeding to London, to take the advice of one of the physicians of the metropolis, which he accordingly did; and I was not called upon to visit him professionally till the 2d of July, up to which period he had followed the prescriptions and directions he received in town, without any apparent advantage.

July 2. I found that he had been attacked three or four times this day in the usual manner. He complained of great languor, uneasiness, and fulness about the epigastrium, which a purge had not relieved; and, on examining the right side carefully, about the region of the liver, there was a tenderness and evident fulness towards the scrobiculus cordis. The pulse was 56 in the minute, and the spirits depressed. He took a moderate dose of castor oil with a small portion of spt. terebinth.; and eight ounces of blood were removed from the hepatic region by the cupping-glasses.

On the 3d I found he had passed a very bad night, and had been troubled with frequent nausea, vomiting, and slight attacks of the paroxysms. The countenance was very sallow, tongue white, pulse 24 in the minute, no uneasiness in the head, urine high coloured, and he still complained of tenderness about the hepatic region. He was directed to rub in half a drachm of camphorated mercurial ointment at bed-time, and to take a pill consisting of pil. hydrarg. with ext. colocynth. and

pulv. rhei; likewise, ten drachms of the decoction of taraxacum, with a proportion of aromatic tincture, twice a-day.

9th. The patient has had several slight attacks, but is again more comfortable. The attacks have generally occurred after dinner. Pulse 52, and firmer; no specific effect from the mercury. Two drachms of Epsom salts were directed to be taken occasionally, in addition to his former medicines.

16th. Has had many slight attacks since I saw him, and he complains much of fulness and uneasiness about the epigastrium; appetite not so good; he looks thinner; pulse only 20 in the minute. He was ordered infusion of cascarilla, with tincture of cardamons and sulphuric æther, three times a-day.

17th. I this day visited him in consultation with my friend Dr. Sanden. The pulse was only beating at the rate of 18 in the minute. The stools contained an abundance of bile, and he thought he felt a slight effect from the mercurial medicines in his mouth, but nothing of the kind appeared on examination. The mercurial medicines were omitted, the draughts continued, and he was ordered an aperient pill twice a-day.

20th. He passed yesterday in a very comfortable manner, and slept quietly during the first part

of the night. Towards morning, however, the paroxysms came on stronger than usual. I found his spirits much depressed, and the pulse, at 2 p.m. only 14 in the minute. I was informed, however, that it had varied from 48 to 54 last night. The patient has had several scanty stools, but he complains of considerable uneasiness in the tract of the colon, with slight tenesmus; tongue a little white; has frequent nausea, for which he has taken a saline draught.

A blister was applied to the region of the liver. He was ordered a draught with sulphate of magnesia, and afterwards to continue the decoction of taraxacum. An anodyne draught (composed of tinct. opii and tinct. hyoscyami in mint water) was prescribed for him at bed-time.

21st. During the first part of the night the patient slept well, after which he had great uneasiness in the stomach, followed by vomiting and also some slight paroxysms; pulse 14 in the minute; says he has a sensation of weight in the head with drowsiness; urine is higher coloured than usual. The anodyne draught was directed to be omitted; pills and draught continued as before.

22d. Has passed a wretched night, and this morning I found the paroxysms more frequent and severe than I had yet seen them. During the paroxysm the pulse is altogether suspended, the

face becomes pale and convulsed, a transient flash then succeeds, the pulse is again felt, and he regains his recollection to be again attacked. The oppression about the præcordia is not very great to-day, the pulse beats at the rate of 74 in the minute, for perhaps the space of a minute, then intermits for 7, 8, or 10 seconds. He has vomited a yellow glairy fluid.

In the evening I found he had been many times attacked during the day, but was then better; he complained however of more pain about the præcordia, and his pulse beat only 20 in the minute. The pills were ordered to be continued, and an effervescing draught to be taken occasionally; he was also ordered to take a draught containing the muriated tincture of iron, four times a-day.

24th. His sleep has been disturbed, and he has experienced several slight attacks; he complains much of oppression about the præcordia; pulse varies from 16 to 18 in the minute. An anodyne at night was added to the former medicines.

25th. Passed the first part of the night very quietly. The attacks are now more like spasmodic twitchings than epilepsy, but they are very frequent, and the pulse is often suspended for ten or twelve seconds. The medicines were ordered to be continued; and a draught, composed of the black drop, ammoniated tincture of assafœtida,

tincture of cardamoms, and peppermint water, to be given at bed-time, in the room of the former anodyne.

August 2d. No return of the paroxysms since the last visit. Twitchings continue, but he looks much more cheerful. Strength returning, and appetite improved; sleeps fairly; pulse 24; tongue clean. Anodyne draught omitted, and the tonic continued twice a-day.

4th. Remains much in the same state with respect to the twitchings, but the other symptoms are improved.

The patient removed from the neighbourhood on the following day; and I learn that the unusual slowness of pulse has continued, with occasional attacks of epilepsy, and that he has since been affected with anasarcous swellings in different parts of his body.

The foregoing case exhibits a train of symptoms which I have never before met with in epilepsy; and the only instances I am acquainted with which in any degree resemble that which is here detailed, are related by the celebrated Morgagni.

The first he mentions is recorded in Book I. Let-

ter ix. Article 7., in which he gives the case of a "worthy priest, of a moderately fat habit, and florid complexion, who in his sixty-eighth year was attacked by epilepsy, which left behind it the greatest slowness of pulse, and, in like manner, a coldness of the body." The latter however was soon overcome, though the disease often returned, but the slowness of the pulse still remained. The first attack of epilepsy was succeeded by a pain in the right hypochondrium, which was resolved by bilious dejections; the other paroxysms, which were slighter, generally succeeded to a sensation of something like smoke arising in the hypochondria and ascending to the head. A sense of fulness about the hypochondria was troublesome to the patient, and increased by the ingesta, especially fluids. As the disease advanced, he was subject to sudden attacks of dyspnœa, which, as in the case I have related, compelled him to sit up in bed. Morgagni does not mention the minimum of the pulse in this instance, but from a quotation he has introduced from Gerbezius, I should conceive it was not below 24 in the minute.

The other case mentioned by Morgagni is in the Letter lxiv. Article 5., which exhibited an equal slowness of pulse, and was considered to have arisen from the same cause, viz. disorder of the chylopoietic viscera. This case terminated fatally, and, on examination, many pints of water

were found in the thorax; adhesions of the lungs to the pleura costalis, and a collection of puriform fluid in the superior lobe of the left side. The spleen was larger than usual, and several of the other viscera shewed slight marks of disease.

The case of this gentleman was one in which, on several accounts, I felt greatly interested; and it is but right to add, that I considered the disease to have arisen from the same cause as Morgagni assigns in these cases, before I consulted his invaluable works. Whether I was justified in doing so, is at present a matter of opinion. I may mention, however, that I have lately had occasion to treat a young lady, who had been long and painfully subject to the most severe attacks of this disease; and by pursuing a plan of treatment calculated to improve the digestive functions, she has been now for nearly two years in the enjoyment of the best health: nor is this a solitary instance.

Welbeck Street, April 6th, 1824.

SOME PARTICULARS

OF A REMARKABLE

DISEASE OF THE HEART,

ATTENDED WITH

PARTIAL DISCOLORATION OF THE SKIN.

By JAMES JOHNSON, M.D.

PHYSICIAN EXTRAORDINARY TO HIS ROYAL HIGHNESS THE DUKE OF CLARENCE.

Read July 5th, 1825.

MRS. A. aged about 30 years, had enjoyed good health till the birth of her first and only child, about seven years ago. From that time she had often been ailing, though she could give no distinct or satisfactory account of her symptoms, they being such as are generally denominated nervous or hysterical. About eighteen months ago, however, her health got seriously worse, after an attack of inflammation about the womb and lower part of the abdomen. About this time a singular change took place in the colour of the skin, in all those parts (and those only) which are usually exposed to the air and light, viz. her face, neck, and hands. The colour of those parts resembled that of a very dark Mulatto, though the

skin of all other parts of the body was remarkably fair and delicate.

When I first saw Mrs. A. about a month before her death, she presented the following symptoms. Her appetite was voracious, being hungry in the course of a few hours after a hearty meal. She had a sensation of sinking at the stomach when empty, but no distinct pain. She was easily put out of breath by any corporeal exertion, though she could expand her chest, and take in a very large volume of air without the least difficulty. Her bowels were not disordered, and the secretions were natural. Her muscular strength was exceedingly impaired, notwithstanding her voracious appetite, and she felt an indescribable mal-aise and restlessness, for which she could assign no reason. Her tongue had a very remarkable appearance, being rough and chapped. Her pulse was habitually so feeble, as to be with difficulty distinguished at the wrist; but her most distressing complaint was what she called "fits of heaving," quite different from sickness of stomach, and never attended with vomiting or any discharge from that viscus. I saw her in one of these fits, and it appeared more allied to globus hystericus than any thing that I could compare it with. These fits were attended with faintness, and once or twice with syncope. She had consulted many medical men, and taken various medicines, but with little or no benefit.

I examined the thorax and abdomen very minutely, but could discover no proof of disease in either of these quarters. The chest sounded well in every part, and the respiratory murmur could be heard every where by the naked ear and by the stethoscope. The pulsations of the heart, however, could not be felt or heard in any part of the chest.

With the warm weather, in the early part of June, her debility made rapid progress, and the "fits of heaving" became more frequent and distressing. She now lost her appetite, and on the 19th of June she expired, after suffering dreadful restlessness, constant jactitation, and sense of unutterable distress internally, for three or four days previous to her decease.

Being often pressed for an opinion respecting the nature of the malady by her husband (an eminent barrister), and by her friends, I stated my conviction that there was some organic disease of the heart, the precise nature of which I could not determine. I was requested by Serjeant A. to examine the body, which I did in the presence of Mr. Haines and Mr. Evans, surgeons at Hampstead, on the 20th of June. To them I reiterated the above opinion before the dissection.

Examination.—Every organ and structure in the body appeared in a state of the most perfect

integrity, except the heart. The *right* ventricle of the heart was enlarged in its capacity, but its parietes were exceedingly extenuated, being not thicker, in any part, than the seventh or eighth of an inch. The parietes of the *left* ventricle, on the contrary, were full three quarters of an inch in thickness, and the capacity of this chamber was so much lessened that it would scarcely admit the fore-finger. There was nothing remarkable in the valves, or in the great vessels leading from the heart, with the exception of the cava inferior, which was of a most extraordinary size.

Remarks.—It must be obvious that all equilibrium between the two sides of the heart was destroyed, and that the important function of the circulation was carried on in a most imperfect manner. It appeared to the medical gentlemen present, and to myself, that the left ventricle was incapable of throwing out more than two or three drachms of blood at each systole; and this explains the extreme smallness and feebleness of the pulse, as well as the general debility. The difficulty which such a heart must have experienced in transmitting the blood from the lungs to the general circulation, may also explain the breathlessness on any muscular exertion; but the change of colour in the skin, and the distressing *heavings* are phenomena which are not so easily accounted for.

As this was a case which excited great interest,

and produced much contrariety of opinion and speculation among medical men, during the life of the amiable patient, I trust the *post mortem* examination may not be entirely devoid of interest, or even of practical utility.

My principal object in submitting these notes of the case to the consideration of the Society, is to draw their attention to the very numerous and anomalous symptoms produced by a defect in the central organ of the circulation; symptoms which are very frequently referred to other sources, when not elucidated by rigorous examination after death.

Suffolk Place, Haymarket,
June 20th, 1825.

CASE

OF

CAROTID ANEURISM,

SUCCESSFULLY TREATED BY TYING THE ARTERY

ABOVE

THE ANEURISMAL TUMOUR.

By JAMES WARDROP, Esq.

SURGEON EXTRAORDINARY TO THE KING.

Read July 5th, 1825.

THOSE cases of aneurism wherein it is impracticable to put a ligature on the artery between the tumour and the heart, have hitherto been deemed incurable; and the cases are by no means very rare in which aneurismal tumours of the carotid, subclavian, and iliac arteries, extend beyond the reach of the knife, and the patient has been left to die under the most distressing circumstances.

As in those cases where the aneurism has been cured either spontaneously, or by tying the artery between the tumour and the heart, the curative process has been effected by the coagulation of the

blood contained in the tumour, it is remarkable that surgeons should not have taken advantage of the knowledge of this fact, and in those cases where the artery could not be tied between the tumour and the heart, have tied it beyond the tumour.*

If we suppose a case of femoral aneurism in the middle of the thigh, it is easy to conceive that when the ligature of the artery at a distance from the tumour was first contemplated, it might have been a matter of dispute whether the ligature ought to be applied below or above the aneurismal tumour; for it is just as easy to imagine that the blood contained in the space between a ligature placed below an aneurismal tumour and the first arterial ramifications above the tumour should coagulate, as that the blood contained in the space between a ligature placed above the tumour and the first anastomosing branch below it, should undergo the process of coagulation. Besides, there are even advantages that might have been anticipated by tying the artery beyond the tumour, in such a case. In the first place, the danger of

* I have used this circumlocution for the sake of perspicuity; the words *above* and *below* having a totally different meaning, in reference to different arteries. Thus, tying the artery *above the tumour* in an aneurism of the femoral artery, implies between the tumour and the heart: while in an aneurism of the carotid artery, tying the artery *above* the tumour, implies *beyond* the tumour, or nearer to the *atlantal aspect*, agreeably to the ingenious language of Dr. Barclay's Nomenclature.

secondary hemorrhage at the place of tying the ligature would be less, from the little resistance it would, at that part of the vessel, be required to make to the impulse of the blood, in comparison to what would be necessary were the ligature placed between the tumour and the heart. In the second place, every collateral branch between the tumour and the heart would be saved to carry on the future circulation; branches which must be obliterated were the artery tied at some distance above the tumour.

This reasoning did not escape the ingenious Desault*, but he never made any practical application of it; and except in a deplorable case of aneurism of the femoral artery, unsuccessfully treated by Deschamps, and in another unfavourable instance in the iliac artery, operated on by Sir A. Cooper†, I know of no others where the practice has been adopted. It therefore appears to me that the subsequent account of a case of carotid aneurism, wherein the artery was successfully tied beyond the aneurismal tumour, in place of the common operation of tying the vessel between the tumour and the heart, is particularly deserving of notice, as it serves to establish an important point in the treatment of aneurism, and may often be the means of saving life under cir-

* Œuvres Chirurgicales de Desault, par Bichat, tom. ii. p. 569.

† See Hodgson's excellent Treatise on the Diseases of Arteries.

cumstances in which the art of surgery has hitherto been deemed unavailing.

A lady, 75 years of age, after a very violent fit of coughing, perceived a swelling on the right side of her neck, a little above the clavicle. When I saw her eight days afterwards, the tumour had all the characters of an aneurism of the carotid artery, and had become as large as a fist; but was so situated that it was quite impracticable to tie the vessel below the tumour, so closely did it come in contact with the clavicle. The tumour continued to increase in size, and on the eleventh day after it was first observed, it had acquired a formidable aspect, the scapular portion having become very red and painful, the pulsation, which was very strong throughout the whole swelling, being here particularly so, and the parietes feeling extremely thin, and as if ready to burst.

It was evident that the patient's life was now in the most imminent danger, and in this hopeless condition it forcibly struck me, that it might be highly expedient to tie the carotid artery above the aneurism, in the hope that, by thus stemming the current of blood through the vessel, nature might establish a new channel to carry on the circulation, allow the blood in the tumour to coagulate, and the sac and vessel to contract and be obliterated, as take place after the common operation. There were circumstances which made

this case particularly favourable for resorting to such a measure; the aneurism had been of short duration, the patient, though far advanced in years, had a healthy constitution, she was of a tranquil disposition, and eager that something should be done for her relief. Besides, the diseased artery was most favourable for the proposed operation, for as no branches are sent off from the carotid artery until it divides into the external and internal, the process of coagulation would not be interrupted by the continuance of circulation through collateral branches in immediate contiguity with the aneurism. The operation also appeared practicable in this instance, as the aneurism, though large, extended upwards so as still to leave sufficient space for the application of a ligature between the tumour and the division of the artery.

Under these impressions, and with the approbation of Dr. Veitch and Mr. Glen, who also attended the patient, I undertook the operation, and the result of it has, in my opinion, fully authorised the measure; and I trust that the future experience of others will confirm its utility. The operation consisted in making an incision through the skin and cellular membrane, rather more than an inch and a half in length, commencing it immediately above the tumour, and extending it on the tracheal edge of the mastoid muscle, and in the direction of the carotid artery, taking care to avoid

the large superficial veins. The subsequent part of the dissection was chiefly made with a silver knife, guided by the finger, and there was no particular difficulty in reaching the artery but what might have been anticipated, from its great depth, from the necessary limits of the incision, and from the numerous large veins which were carefully to be avoided—particularly a branch which extended across the middle of the incision to the internal jugular, and which consequently diminished the space in which the artery was to be taken up. After a careful dissection, which was tedious from its being necessary to tear the parts with the silver knife, the artery was so completely separated from the adjacent parts, that the point of the finger could be readily passed between the vessel and the vertebræ, and the aneurismal needle, of which I have annexed a particular description*, was passed round the artery with singular facility, taking care to avoid the par vagum which was distinctly felt behind the finger. The vessel being previously ascertained to be healthy, one ligature was tied round it, as close to the tumour as the incision would admit, and the lips of the wound were stitched together by a suture, without any farther dressings. The aneurismal tumour was covered with adhesive plaster, in order to protect the tender skin, and at the same time to keep up a certain degree of pressure.

* See the Appendix to this Paper.

I thought it probable that the resistance to the circulation, which the ligature would necessarily occasion, might, for a short while at least, after its application, be followed by an increase in the distention of the tumour; instead of which, however, there was an immediate decrease in its bulk, marked by a considerable corrugation of the skin at the base, as well as a diminution of its redness. The ligature of the artery did not seem to produce any change in the mental functions, or any unnatural feelings in the head; on the contrary, the patient passed the night after the operation more comfortably than that previous to it, the tumour being accompanied with less uneasiness.

A progressive diminution in the bulk of the aneurism, and in the strength of its pulsations took place, so that on the fourth day after the operation it seemed to have diminished nearly one third in its bulk; the upper and tracheal portions had lost all pulsation, and only the scapular portion retained an obscure undulatory thrill. The integuments, which had lost their redness, now evidently became more inflamed, and during the fifth and sixth days there was a distinct increase in the size of the tumour, and it pulsated more strongly, which seemed partly owing to several severe fits of coughing. This apparently unfavourable change was, however, followed by a decided amendment; and eight days after the operation the swelling

again began to diminish, and the pulsation became more obscure, so that on the fourteenth day it was not much larger than half its bulk at the time of the operation, and no pulsation could be detected in any portion of it; merely a slight vibration in some parts which seemed to be produced by the pulsations of the contiguous vessels which were now enlarged, particularly the inferior thyroid artery.

The redness of the skin, however, continued to increase and that of the scapular portion of the tumour to become more and more of a purple colour, till, at last, ulceration commenced on the most prominent part. Several considerable-sized portions of coagulated blood were discharged along with some healthy pus through the ulcerated opening; and on the 20th day after the operation, the ulceration of the integuments had closed, and nothing of the tumour remained, but some wrinkling of the skin, and a considerable degree of thickening of those parts on which the base of the tumour had rested. These continued to diminish, and at the end of the fifth week, from the time of the operation, the neck had nearly resumed its natural form, a slight degree of inequality only remaining; the ligature had come away, and the patient's general health, to the management of which the greatest care had been bestowed, appeared now to be completely re-established.

This case appears to me to prove satisfactorily,

the possibility of the success of this mode of operating for aneurism, and of the important advantages which are likely to be derived from it, more especially in those cases which have hitherto been considered beyond the aid of surgery.

The operation may also, under particular circumstances, be preferable to tying the ligature between the aneurism and the heart, even in cases where that operation is practicable. For as in that which I have just narrated, had it even been possible to have tied the artery between the tumour and the heart, how much more dangerous and difficult would the operation have been, and how much greater would have been the risk of secondary hæmorrhage at the place of the ligature.

The only circumstance which must be considered as indispensable to the success of this mode of operating is, that there be no vessel arising, either from the sac itself, or from the artery between the sac and the ligature, sufficiently large to keep up the circulation of the blood through these parts, and thus prevent its coagulation. I say sufficiently large, for it is perfectly ascertained that after the common operation of tying the artery between the tumour and the heart, pulsation to a certain degree often continues for some time, notwithstanding which, neither the gradual process of coagulation in the tumour is prevented, nor the subsequent

contraction and condensation of the aneurismal sac and insulated portion of the artery.

When an aneurism is cured spontaneously, it is evident that in general the process must in like manner be slow; and that the circumstance of the circulation through the tumour being rendered languid, equally suffices to admit of the blood coagulating, as if circulation was completely stopped.

These considerations lead me therefore to hope, that the operation of tying the artery beyond the aneurism, will in many instances be successful, even though the current of blood through it be not completely stemmed. To ensure, however, this being done, the ligature should be made as close to the tumour as possible, in order to preclude the chance of leaving a branch between the tumour and the ligature, which would carry on the circulation; and I can even conceive cases wherein it might be practicable to tie such branch separately, so as effectually to prevent the circulation being carried on through the aneurism.

Charles Street, St. James's Square,
July 1, 1825.

APPENDIX.

DESCRIPTION

OF

MR. BREMNER'S INSTRUMENT

FOR CARRYING A LIGATURE ROUND DEEP-SEATED ARTERIES.

VARIOUS contrivances have at different times been proposed for conveying ligatures around the subclavian and other deep-seated arteries; but the great defect to which all the instruments that have been invented for this purpose are more or less subject, is their being formed either of unyielding materials, and consequently, incapable of bringing the point into view on the side of the artery opposite to that at which it enters; or, when of sufficient curvature for carrying the point completely round the vessel, their form precluding the possibility of entering the point at the commencement of the operation.

The instruments which have been constructed with flexible materials, such as a spring, are found either to want strength, or elasticity, both which properties are absolutely necessary to an instrument in every way fit for the purpose intended.

If deficient in strength it cannot admit of pressure sufficient to enable it to find its way through the cellular membrane surrounding the artery; and when sufficiently strong to do this, it must want that elasticity which is necessary to allow of its taking the form required in the different stages of the operation. A spring capable of describing a circle, the area of which shall be equal to the circumference of such an artery as the subclavian, cannot exceed in thickness that of a common watch-spring, and then, only, when the metal possesses the highest possible temper; for, if the spring be thicker than that of a watch, it cannot, when of the required curvature, be drawn into a straight canula, without breaking it. Elasticity, therefore, and strength are two indispensable properties in an instrument that must be projected from a straight canula; and that now to be described possesses these in an eminent degree.

Mr. Bremner's Instrument consists of a flat canula (aaa Plate V. Fig. 1), within which are contained three distinct but parallel springs (b b), each spring being of the best possible temper, and capable of being made straight, or of assuming their original curved form, without either breaking or *setting*; when drawn within the canula, they are confined nearly in a straight line, and when projected from it assume their natural curve, and thus a ligature attached to their extremity (c) may be carried round any artery. It is necessary

to mention that, although the springs are placed parallel to each other, and appear united at both extremities, yet they are rivetted together only at the point of the instrument; because it is essential that they have a considerable degree of longitudinal play; for when two straight rods, fastened at both ends, are bent, the exterior rod must either elongate or break. By being rivetted only at one end (c), the springs are allowed to play over one another at the opposite extremity; the exterior spring only is fastened by a screw to the handle of the instrument, to serve the purpose of either pushing forward, or retracting the extremity to which the ligature is attached, whilst the two other springs, the upper ends of which lie loose in the sheath of the handle, slide backwards and forwards in it, to the length of about the eighth of an inch and more, as the opposite end advances from a straight to a curved form; that is, from the period of the operation, when the point of the instrument is introduced at one side of the artery, till it appears at the other, having encircled it with the ligature.

From the above description, it may appear to many persons that in order to convey a ligature by this instrument round a deep-seated artery, it is merely necessary to present the point of the instrument at one side, and immediately push the springs forwards, plunging at once through the cellular membrane surrounding the vessel; and

thus, in a moment, completing the whole. I am induced to state this supposition, from having once seen the instrument thus unfairly, and improperly applied; and notwithstanding the operation was successful, yet it could not be attributed to the skill with which it was performed, neither would it have been a fair instance of the inadequacy of the instrument, had it failed. On this account, it appears to me not only essential to describe the properties and peculiar construction of the instrument, but also to explain minutely the most advantageous mode of using it.

Draw the curved part of the springs within the canula; place the noose of a ligature over the point in the eye of the needle (c); then lead the ligature along the back of the canula, and through the ring of the socket in which the springs slide; it is not to be made fast, but to hang loose from the ring. Then, having laid bare the artery, and the instrument being thus armed with a ligature, it is to be held by the lower point in one hand, and presented by the side of the artery; while, with the fore-finger of the other hand, the operator endeavours to guide in the favourable direction the point of the instrument, and avoid the inclusion of a nerve. When he desires this, the springs should be pushed forward; he directs an assistant to do so, little by little, as he may himself perceive the point of the instrument ad-

vancing, till it has come completely round, and encompassed the vessel; he now, with his finger nail, feels the ligature, lying on the back of the outer spring, and makes a slight pressure on it, directing, at the same time, the assistant to draw back the springs about half an inch; this immediately relaxes the ligature, the noose of which he disengages from the above mentioned point, by merely scraping with the nail the relaxed portion of the ligature towards the eye of the instrument.

ON THE

MEDICAL PROPERTIES

OF THE

SUBCARBONATE OF IRON.

By JOHN ELLIOTSON, M.D. Cantab.

Fellow of the Royal College of Physicians, and of the Cambridge Philosophical Society, and Physician to St. Thomas's Hospital.

Read June 13, 1824.

IT is now four years since I published an account of the large doses that may generally be given of the pulvis antimonialis without any sensible effect*. I purpose to shew that almost equally unexpected quantities of another medi-

* Numerous Cases illustrative of the Efficacy of the Hydrocyanic or Prussic Acid in Affections of the Stomach, &c. 1820.

I found that frequently two or three, and sometimes upwards of five, scruples might be taken two or three times a-day, without nausea, purging or other apparent effect, by persons labouring under the most trifling complaint, such as a slight and local cutaneous affection. I am well aware that, when a violent morbid condition of the system exists, the operation of agents in general is impeded, and have mentioned, in the same work, some striking examples of the large doses of medicines that

cine may be given. But, while the pulvis antimonialis never appeared in the slightest degree

are required in diseases of extreme violence to produce the ordinary effect.

The attainment of such large doses of the pulvis antimonialis was indeed gradual, but not so slow that the circumstance could be explained by supposing that the system had become habituated to the remedy. The augmentation was usually five grains, but sometimes ten, fifteen, or twenty. The following case, which occurred soon after the publication of the others, will place this point beyond dispute.

A footman in my father's family, twenty years of age, had a catarrh, went to bed in the evening, and took ten grains of pulvis antimonialis and a basin of gruel. The next morning I found he had experienced no effect from it; had neither felt sick, had a motion, grown cooler, or improved at all, and I gave him ʒss. In the evening no effect had been produced, and I gave him ʒj. The second morning I found that no effect had occurred, and I gave him ʒjss. This, in an hour, excited vomiting. He three times discharged a great deal of green bile, had one motion, and his headache, hoarseness, cough, and tightness across the chest, were at once greatly relieved. As the medicine had been efficient, I was desirous of knowing whether a smaller dose would now act, and therefore gave him ʒj. in the evening. It had no effect.

The articles on which my observations were made, came from a variety of houses, and were often the best I could procure, and one quantity was manufactured expressly for me, according to the letter of the Pharmacopœia.

Since a drachm and a half or two drachms will occasionally derange the stomach in adults, and a grain or two generally in children, I should be sorry to assert that the pulvis antimonialis is absolutely inert, but am convinced that its ordinary exhibition serves no other purpose than to amuse the patient and the practitioner.

The peroxide of antimony is said to be perfectly inert. In

beneficial, however large the quantity taken, when it produced no sensible effect, I am happy not only to confirm the reputation of the medicine to which I have at present the honor of soliciting the attention of the Society, but to furnish some facts by which I trust it will be heightened.

I.

The usual doses of the subcarbonate of iron are, I believe, from fifteen to thirty grains, and

specimens of the pulvis antimonialis obtained from two respectable houses, Mr. Philips found 100 grains to contain between 60 and 70 of phosphate of lime, and the rest to be peroxide of antimony. Mr. Brande found the pulvis antimonialis sometimes to be little more than phosphate of lime; sometimes to contain peroxide, and at others protoxide, of antimony. The inertness and uncertainty of the medicine are thus fully explained.

On analyzing James's Powder, Mr. Philips ascertained the composition to be nearly equal parts of phosphate of lime and peroxide of antimony. The reputation of this quack medicine I should therefore imagine to arise both from the successful efforts of nature and from the simultaneous employment of bleeding, purging, and other vigorous measures in severe cases, and of copious diluents, a warmed bed, &c. in those slight catarrhal cases in which above all it is celebrated.

I may perhaps be permitted here to state, that very extensive experience with Prussic acid for four years, has fully confirmed all I published respecting it in the work referred to, and has not furnished me with any additional information, except that it is equally successful against violent and chronic hiccup as against other symptoms of disordered stomach, and that it will in some cases cause ptyalism and irritation of the mouth, as noticed by Dr. M'Leod.

these are given two or three times a-day. Some few practitioners, I know, exhibit occasionally a drachm at a dose, but they consider this a large quantity; and Dr. Hutchinson, who has written upon the virtues of the medicine in neuralgia, and probably employed it more than most others, tells us that the greatest quantity he has ever found necessary is ninety grains in the twenty-four hours. His mode of expression leads to the supposition that this is the largest quantity he has ever given. Mr. Carmichael has employed it as extensively as Dr. Hutchinson, and appears, from his narrations in the work upon the efficacy of iron in cancer, to have generally given less than a drachm in the twenty-four hours, and once only so much as four scruples. But I have ascertained, by very numerous trials, that, when the use of the medicine is proper, it may be given in far larger quantities: that two, three, and four drachms may be given every six, nay every four hours; that this dose of half an ounce may be at once commenced with, and does not require, in order that it may be borne, to be reached by slow degrees, and that it may be continued many weeks without the slightest inconvenience.

I have become acquainted with these facts during the last twelve months. It had for many years been my custom to prescribe the medicine in drachm doses, but having, about a year ago, several cases in which its exhibition appeared proper,

and never having observed any sensible effect from it, I began to think that a drachm was probably not the utmost quantity which the stomach would bear, and resolved to ascertain, by cautious augmentations of the doses, how much might be taken. It soon became evident that there was no occasion for timidity, and my uniform experience in nearly a hundred cases enables me to present the results just stated. When the medicine is proper, I believe there is generally no limit to the quantity which may be taken, except the unwillingness of the patient to swallow it and the inability of the stomach to manage so heavy a mass. Neither headache, thirst, heat, foulness of tongue, griping, nor constipation has occurred*, nor been increased if already present. Nay, pain and heat of the head and giddiness existed already in some cases, and ceased during its employment.

I am enabled to say that these quantities are ordinarily borne, exactly as is the case with the pulvis antimonialis, not because the operation of

* I wish not to assert that such inconveniences will never occur, but the absence of them in all my trials justifies me in believing that they will not prove common occurrences, with even half ounce doses. Many practitioners are no longer deterred from giving iron by headache, foulness of tongue, &c. if other circumstances indicate its employment. I believe that when it excites and disturbs, this arises from a peculiar susceptibility to its influence, as I shall endeavour to prove with respect to the oil of turpentine, unless, of course, the system is already in a highly excitable state.

the medicine is resisted by an unnatural condition of the system, not because the quantity is gradually reached, and not because the article is bad. The article was procured from a variety of druggists, from many of the most respectable houses in London, and was in fact, in several examples, known to be a genuine article prepared according to the letter of the Pharmacopœia*.

Whether there is any advantage in these very large quantities I cannot say. A drachm dose may perhaps be as useful as one of half an ounce. Even when large doses effected all the good desired in my cases, after small ones had failed, it may be urged that not the increased quantity, but the continuance, of the remedy, produced the effect, and the question can be decided only by a comparison of cases, similar in every respect, treated one half by common and the other by large doses.

Reasoning analogically, one would conceive that large quantities must be more serviceable. Cinchona, for instance, will cure an ague in doses of a drachm, given every two hours, when two or

* If the articles used by me were all proved to be bad, the importance of my facts would remain little diminished (and the same would hold in regard to the pulvis antimonialis), because the variety and respectability of the houses at which the medicine was purchased, shew that the facts, if not true of genuine subcarbonate of iron, are true of the subcarbonate in common use.

three table-spoonfuls of the decoction three times a-day, or even a drachm of the substance given not more frequently, altogether fails. We are accustomed to increase the doses of all medicines for the purpose of increasing the effect. In the very example of subcarbonate of iron, practitioners prescribe sometimes what they consider a small dose, sometimes what they consider a large one, according to the force which they judge necessary to bring up against the disease; and they increase the quantity as the disease proves obstinate. Now since it appears that the dose of this medicine has a much wider range than has been thought, and that the terms large and small must relate to quantities different from those to which they have been hitherto applied, the same habit of practice would incline one to these large doses in obstinate cases, unless such comparative observations, as have been just alluded to, prove them to be no wise superior to what have hitherto been considered large. It may be worth while, too, here to quote a passage from Cullen. "We are persuaded that the good effects of the preparations of iron have often been missed by their being given in too small doses. The saline preparations, in large doses, are ready to irritate the stomach; and both on this account, and on some other considerations, it may always be proper to begin with small doses, and to increase them by degrees; but we have often found, that no great benefit is to be obtained but when large quantities, either by the size of

the doses or by the continuance of them, have been thrown in."*

I may remark that Sydenham's favourite form of iron was the filings, and that Cullen says, "we have found the simple rust as effectual as any other preparation, and we have always found the stomach bear it better."

It is right, however, while quoting Cullen, to mention that he also says, "We have been informed of its being given to the quantity of six drachms in one day; but we have hardly found any stomach that would bear the third of that quantity without sickness." The apparent variance of his experience from mine is easily explained. He employed the *rust* of iron. Such only was the carbonate of the Edinburgh and also of the London Pharmacopœia, when he published his Materia Medica. My observations relate of course to the present preparation of the London Pharmacopœia, procured by *precipitation*, and therefore an impalpable powder. The grittiness of the rust would soon turn the stomach of any one, if administered in large quantities.

Before concluding this first division of my subject I may state, from equally abundant experience, that a scruple of the sulphate of iron, made into pills with the extract of gentian, is borne

* Materia Medica, Vol. II. p. 23.

just as well as half an ounce of the subcarbonate*, and that every observation which I have made respecting this dose of the latter applies nearly to that dose of the former. I have occasionally given more, and even in solution, without sensible effect.

II.

A case of paralysis agitans, as it is termed, fell under my care, and, like every case that I shall detail, at St. Thomas's Hospital. After fruitlessly trying what seemed all the most probable means of curing it, I fancied that, as the subcarbonate of iron exerted considerable power over neuralgia, a disease of the nervous system whose proximate cause is unknown, it might perhaps prove useful in what is equally a disease of the nervous system, and whose proximate cause is also a mystery. The following is the case.

"April 17, 1823. Joseph Deacon, aged twenty-eight years, ill one year. Constant shaking of the legs and arms. The intensity of the tremor varies. Till within the last week, the agitation would sometimes cease for a few hours or even a whole day, but for the last week has been constant. At first, sometimes only one leg was affected, sometimes both. He has pain in the head, loins, and legs, and vertigo, and cannot fix his attention."

* I myself took a scruple three times a day for several weeks without any sensible effect.

I at first brought out and maintained a copious crop of pustules on his legs by the ointment of tartarized antimony*.

He next took ℥j. of oil of turpentine, and then ℥ij. every other day for above a week†.

* A remarkable effect of the free application of this remedy to the lower extremities, is the production of pustules upon the genitals. I have ordered this application of it in very many cases of rheumatic pains, and, when Dr. Jenner's work upon its virtues appeared, subjected the legs of a host of patients to its irritation, as in Deacon's case, with the hope of removing the disease of a distant part. In the greater number of examples, the appearance of pustules on the legs, even when the ointment was rubbed entirely below the knees, was accompanied by a crop of pustules chiefly upon the scrotum, but also upon the glans and other parts of the penis, and sometimes in the perinæum, groins, and on the verge of the anus. Similar consequences resulted in females. The friction on the abdomen with the ointment has occasionally had the same effect. I have never noticed the same circumstance when the ointment was rubbed on other parts, unless the patient was careless and dirty, and touched the genitals with it.

It is with the deepest regret that I state my failure with this ointment, employed with the view of curing or lessening the various diseases of distant parts for which the ever-to-be-revered Jenner hoped that he had found a remedy. But I fully value the ordinary use of the tartarized antimony in the immediate neighbourhood of diseased parts, although convinced that, even in chronic cases, blisters are often of not at all inferior, and often of superior, efficacy.

† The circumstance of large doses of the oleum terebinthinæ rarely causing irritation of the urinary organs, is generally explained by supposing that their quick escape by the intestines prevents its absorption. This appears unsatisfactory

He then went through a course of sulphate of zinc, taking at first gr. j. and at length gr. vijss. every six hours, but the dose was reduced to gr. vj. on account of nausea. During this course, his head was kept constantly wet with a cold spirituous lotion, he was cupped on the occiput, had a blister on the forehead and another on the occiput kept open nearly a month with sabine ointment, and eight leeches applied daily to the temples from the 20th to the 31st of May, and took frequent purgatives: yet he was no better.

June 3. I prescribed 3ss. of the subcarbonate of iron every eight hours, with eight leeches to the temples every other day, and a perpetual blister to the forehead, on account of the violent pain of

to me, because, 1. I have frequently known a large dose remain in the alimentary canal four and twenty hours, and longer, and yet not be followed by irritation of the urinary organs. 2. Now and then a large dose, although it pass off quickly by the bowels, produces great irritation of the urinary organs. 3. A large dose passing rapidly through the intestines and not irritating the urinary organs, often makes the urine smell strongly of turpentine for many days, shewing that absorption has taken place. 4. A very small dose will sometimes irritate the urinary organs exceedingly. 5. A dose of a drachm or two, insufficient to stimulate the intestines to its expulsion, rarely excites irritation of the urinary organs. I cannot therefore but think that the serious irritation of them which has occasionally resulted from turpentine, has been the effect of idiosyncrasy,—of a strong susceptibility of them to be affected by it:—that a large and a moderate dose would each have proved irritating in the individuals.

the head, the vertigo, and the heat and smarting of the eyes.

June 7. He felt already better.

June 11. The dose was increased to 3j. and the leeches continued.

June 14. 3jss. for a dose.

June 17. Still better in regard to the shaking, but the headache, vertigo, &c. as before.

June 21. 3ij. for a dose. Another perpetual blister to the forehead, the last having healed.

July 1. He felt so satisfied that neither the blisters nor leeches had procured the least relief to his headache, vertigo, or the pain and smarting of the eyes, and these symptoms had so clearly not been aggravated by the iron, that the former were discontinued, and the dose of the latter augmented to 3ijss. three times a-day.

July 8. 3iij. for a dose. The shaking was lessening rapidly, *as well as the vertigo, headache,* &c.

July 12. Still better. 3iij. four times a-day.

July 15. Scarcely any shaking observable. *No*

headache, vertigo, or any other unpleasant feeling about the head.

Finding himself so well, he left the hospital by his own desire July 17th, taking with him a sufficient quantity of his medicine to last a month. I saw him several months afterwards perfectly well.

The successful issue of this case* induced me to exhibit the same remedy in chorea, and the following cases prove its great power over the disease.

CASE I.

Sept. 11, 1823. Elizabeth Spencer, an emaciated, pale, ugly girl, aged fourteen years. Ill with universal chorea ten days, but the right arm has been affected for three weeks. One of the most frightful cases I ever witnessed. She not only cannot walk or stand, but is with difficulty kept in bed, or in the arms of any one, even by two or three persons. She cannot speak, and is continually screaming. She had squinted

* I must mention that a case of the same nature in an old woman lately occurred to me, and was not at all benefited by the remedy, though pushed to the greatest extent and long continued: but it was of several years' standing. Sometimes the bowels are obstinately sluggish, and purgatives and even bleeding are very serviceable.

with the right eye from birth, but her squint is now horribly increased, and is, in fact, with both eyes. She never sleeps, and has suffered three epileptic fits during the last week. She was bitten in the left leg four months ago, and very much frightened. Her bowels were always regular till this week, and she has now had no stool for four days.

She was ordered grs. viij. of submuriate of mercury on this and the following day.

Sept. 13. ʒss. of the subcarbonate of iron every six hours; on the 16th ℈ijss.; and on the 21st ʒj.

In a few days she was less agitated, and left off screaming; in a week she required no straps to confine her in bed. She presently could sit, stand, and walk alone, and at the end of a month was perfectly well. Her medicine was continued till the completion of six weeks (Oct. 23), when I dismissed her with a supply of it for a fortnight. During the course of iron she took aperient medicine but once or twice, and I saw her some months afterwards in perfect health.

CASE II.

April 29, 1824. Sarah Evans, aged twelve years, afflicted with chorea five weeks. She had a discharge in the left thigh from a diseased hip-

joint for four years, and it ceased three or four days before the chorea began. At first there was violent pain of the head, but this yielded to leeches and a blister, and strong purgatives. The latter were continued during the whole of the first fortnight, at the end of which she became much better and remained so for a week, when the chorea became as violent as ever. For the last three weeks she has taken medicine smelling strongly of turpentine. Is now rather better, but constantly in violent motion, so that she can neither stand nor sit, and can be scarcely kept in bed; nor can she articulate. The pulse is 120, and there is great heat. The bowels are relieved once a-day.

I prescribed ʒj. of the subcarbonate of iron every eight hours.

May 4, she could sometimes hold things in her hand. On the 8th, was much quieter, and could talk a little. On the 18th, could stand and walk alone, and in a few days was perfectly free from disease. She was dismissed, June 3, with a supply of medicine for a fortnight. She took opening medicine but once or twice while in the hospital.

CASE III.

Sept. 11, 1823. Ann Guinn, aged eight years. Has had chorea a fortnight. Laboured under it

twice before; once two years ago, and has recovered from the last attack eight months. *The head aches*, but the bowels are regular.

Eight leeches were applied to the head, and six grains of submuriate of mercury given on the day of admission and the subsequent day. Her diet was to be vegetable.

Sept. 13. There was no improvement; 3ss. of the subcarbonate of iron three times a-day was prescribed, with 3iij. of castor oil every other day.

On the 16th she was much better, and on the 21st scarcely any agitation was perceptible. I therefore dismissed her, ordering a supply of medicine for two or three weeks. By some mistake of her mother's she did not obtain it, and a fortnight afterwards I saw her again affected with the disease, but in a much less severe manner. I furnished her with a good quantity of the medicine, but did not hear of her afterwards.

CASE IV.

April 8, 1824. Elizabeth Powel, aged twenty-two years, ill with chorea six months. Had the disease six years ago. The right side most affected. *Pain of the forehead, especially on stooping.* Has been bled and purged without benefit.

3ij. of the subcarbonate of iron every eight hours were ordered.

On the 13th she was rather better, and on the 17th much better. Her speech was greatly improved, and she could hold any thing in her right hand. *The pain of the head was quite gone.* She afterwards complained of pain in her left side, which was removed by two bleedings. She was dismissed on the 18th perfectly well.

*CASE V.**

Aug. 12, 1824. Elizabeth Howel, aged eleven years, affected with chorea five weeks. Her sister, thirteen years old, has laboured under it two months. *She has a florid complexion, and is in high condition.* The right side is much more affected than the left. Occasional headache; the bowels usually costive.

* The four following cases occurred after the paper was presented to the Society; but, more than a year having elapsed between its reading and its publication, I have seized the opportunity of inserting them. During this time, successful examples of the same mode of practice have appeared in print, and others have been mentioned to me by friends to whom I had recommended it. In these four cases it will be remarked that no aperients were once thought of, for I had become better acquainted with the properties of my remedy, and in two of the former three in which they were prescribed, it is evident that they could not have contributed in the least to the cure.

She was ordered ʒj. of the subcarbonate of iron every six hours.

On the 31st the dose was increased to ʒiij. and on the 18th of September to ʒss.

Sept. 21. She was no better (the weather had been for some time intensely hot, and had rendered her irritable), and for some reason, I forget what, the sulphate was substituted for the subcarbonate, in doses of gr. v. three times a-day.

Oct. 2. The dose was advanced to gr. vijss., and on the 5th to gr. x.

Oct. 9. She was no better, and, being satisfied that the subcarbonate would cure her, I resumed it. She began with ʒij. every six hours: advanced on the 13th to ʒss., and on the 23d the same dose was taken every four hours.

She had mended rapidly for some time, and was dismissed perfectly well on the 4th of November. The disease returned in a very slight degree, but yielded permanently to the medicine.

CASE VI.

Sept. 2, 1824. Mary Thornton, aged sixteen, afflicted with chorea twelve months. She was ordered ʒiij. of the subcarbonate every six hours.

On the 18th the dose was augmented to ʒss., and on the 9th of October the frequency was increased to every four hours.

On the 4th of November she was dismissed, having been perfectly well some time.

CASE VII.

March 10, 1825. Isabella Leach, aged nineteen years, ill with chorea three weeks. For two years previously she had a little numbness of the arms and face, chiefly in the morning, with severe headache. These symptoms were all removed by leeches and purgatives, and she remained well for five weeks, when the chorea began, and it still increases. She cannot articulate, nor make her bed. The pulse is quick. There is occasional pain of the head and abdomen, and occasional costiveness. She menstruates regularly. Sleeps very badly.

Ordered ʒss. of the subcarbonate of iron every six hours.

On the 15th she had begun to sleep better, to articulate distinctly, and was less agitated. On the 23d she began to take the medicine every four hours.

On the 29th she was so far recovered as to

do needle-work: was soon after quite well, and was dismissed on the 5th of May.

CASE VIII.

May 12, 1825. Lucy Blomfield, aged fifteen years, ill with chorea seven weeks. Had it three times before, in the spring: the last time six years ago, and the two preceding springs. Right side only affected. *Headache*, but always subject to it. *Sight of right eye sometimes lost for half an hour.* Bowels regular. Has never menstruated.

She was ordered ʒss. of the subcarbonate of iron every six hours.

On the 21st she was much better, and her headache was gone. She soon got well; *lost the headache entirely, and the affection of her sight.* She never required opening medicine, and was dismissed June 23.

These are *all* the cases of chorea in which I have employed the medicine, with the exception of two that continued so short a time under my care that its powers were not put to the test. But, although it has so strikingly cured all these cases in succession, I do not extol it as a specific. It may, indeed, sometimes be safely given even when

the head aches, the tongue is foul, and the bowels torpid, but the removal of blood and the use of purgatives may sometimes be the correct plan of treatment, at least in the first instance, and I, when a student, saw a young woman labouring under the disease die apoplectic. Besides, there are some cases of chorea probably connected with organic disease of the brain.

Iron has been recommended in chorea among the multitude of vegetable and mineral tonics, but I am not aware that its powers have been at all appreciated, or the possibility contemplated of giving it with advantage where there were headache, vertigo, and symptoms of a degree of paralysis. Dr. Good, the most recent and extensive of our compilers, mentions almost every remedy employed in this disease, and refers to numerous authorities, but says, "the metallic salts and oxides have been tried in every form, with apparent benefit in a few individual cases, but without any decided or general success." And in the next page, "The preparations of iron have for the most part been found too stimulant".

I have failed with the largest quantities of iron in epilepsy, cancer, and lupus, but found it very beneficial in chronic neuralgia, and various chronic ulcerations and chronic pustular diseases, as well as those diseases of debility in which it is so justly celebrated.

Whether the sulphate would answer as well as the subcarbonate in neuralgia and all other cases where the latter is beneficial, I cannot say, but the following case illustrates its use in chorea.

Oct. 2, 1823. Caroline Marks, aged four years, ill with chorea one month. Cannot walk. *Is a fat rosy-faced child.*

I prescribed ℈j. of the subcarbonate of iron every six hours, but, on account of her plethoric state, four leeches also to the temples, on the day of admission and the subsequent day; and on the 3d and 4th she took gr. iv. of the submuriate of mercury. On the 7th she could walk, but, on account of the difficulty of making her swallow physic, the doses were now ordered every eight hours only, and increased to ʒss. Scammony and submuriate of mercury were likewise directed to be taken when necessary. This, however, seldom happened.

On the 14th she was worse, but had generally refused to take her medicine. I therefore substituted the sulphate, and prescribed gr. iij. three times a-day.

On the 18th she was much better, and the bowels had been so regular that she had but once required the cathartic. On the 21st she was free from disease, and dismissed with a supply of the sulphate for a fortnight.

NOTES

OF A

CASE OF HYDROPHOBIA,

WITH

SOME REMARKS ON THE PATHOLOGY OF THAT DISEASE.

BY GEORGE GREGORY, M.D.

SECRETARY TO THE MEDICAL AND CHIRURGICAL SOCIETY,
PHYSICIAN TO THE SMALL-POX HOSPITAL, ETC.

Read June 28, 1825.

GEORGE Sandall, twenty-eight years of age, the servant of Haviland Addington, Esq., was the subject of the following case. He was of a remarkably strong, athletic habit of body, broad-chested, and full-blooded. He had been troubled occasionally with rheumatism, and about a twelve-month prior to the date of that attack to which I am about to call the attention of the Society, he had suffered from rheumatism in an acute form. His habits were active, and his disposition lively.

Very early in the month of May last, (probably either Monday the 2d or Tuesday the 3d), he was enjoying himself with some fellow-servants at the public-house called the Queen's Head, in Stafford Street, Albemarle Street, when his attention was

caught by a stray terrier dog lying under the table. In rude play, he seized the dog by the tail, who turned round and bit him in the outer side of the left hand*. He complained a good deal of the hand that evening and the following day. Soon after this, it was noticed by several of his friends that his spirits flagged; he became dull and melancholy, but when pressed to explain the cause of this oppression upon his spirits, he made light of it, and tried to laugh it off. Once or twice however he appears to have alluded to his hand, which he said was affected with rheumatism. Frequently during the same period he complained of severe rheumatic pain and swelling of the knee, which he bathed continually with warm water, intimating to several of his acquaintances that he feared he was going to be laid up with an attack of his old enemy, the rheumatism.

About Friday, June 10th (thirty-nine days, as nearly as can be ascertained, from the infliction of the wound), he began to complain of soreness of his throat. He could not swallow without inconvenience, and this increased considerably upon the Saturday. On both of these days his left hand, he said, *felt queer*, and he noticed a slight puffiness upon the back of it, which he attributed to rheumatism.

* All my endeavours to trace out the further history of the dog proved ineffectual.

On Sunday he dined with the family, and ate heartily. He still however continued to complain of his throat, and of a difficulty in swallowing; but he nevertheless took two pints of porter at his meal. On returning home from his walk that afternoon (Sunday, June 12th), he complained that the wind in the hall-passage affected him, and he nearly fell down. Several times during the course of this evening a sense of suffocation came over him, and he swallowed his tea with considerable pain. He appears to have passed a restless night, and on Monday morning he complained of being so weak and poorly as to be unable to clean his master's shoes.

Some of his friends who met him that morning noticed a staggering in his walk, and an expression of countenance as if he had been intoxicated the preceding evening; nor were they without difficulty persuaded of the contrary. Several times in the course of Monday he was sick at stomach, and on this day he applied to Mr. Smith, a stable-keeper in Mason's Yard, Maddox Street (where his master's horses were kept), for a prescription for the rheumatism, of whose virtues he had heard. This composition, consisting chiefly of sulphur and gum guaiacum, was given to him, and he then returned home. About four o'clock that afternoon the symptoms assumed a more decided character. An hysterical catching of the breath now came

on, and deglutition became more and more painful. He succeeded however in getting down two cups of tea.

During the early part of the night he was excessively restless, complaining of the least breath of air. About two o'clock, he asked for some water to drink; when it was brought to him, he threw himself to the other side of the bed with a sort of convulsive agitation, which the person in attendance not inaptly compared to the sudden spring of a flounder.

An antispasmodic julep was procured from a neighbouring chemist's shop, which, however, he could not be prevailed upon to take, expressing at the same time his readiness to try some medicine that was *thick*. This expression first opened the eyes of those around him to the real nature of his disorder.

At eight o'clock on Tuesday morning (June 14th), he was visited by Dr. Wilson Philip, who found him in a highly nervous and irritable condition. His breathing was in short catches, attended with that noise commonly observed after plunging into cold water. His pulse was but little affected. He made no particular complaints, but his manner was hurried, and his eye wandered from the door to the window in a very characteristic manner. He attempted to swallow a pill which Dr. Philip

prescribed, but it is doubtful whether he succeeded. At eleven o'clock he was, by Dr. Philip's advice, put into the warm bath, which he bore with firmness, and without complaint; but immediately on coming out of it, the symptoms increased with alarming violence, and with a rapidity almost unequalled in the records of this terrible malady. He was again visited by Dr. Philip between twelve and one, and by Dr. Hooper at two. He made an attempt to swallow liquids in Dr. Hooper's presence. A teapot was brought to him covered, in order that the sight of the water might not operate prejudicially. This he seized with both hands, and, after waiting a few seconds in great agitation, threw it up convulsively to his mouth, and succeeded in swallowing a portion.

Sickness at stomach now supervened, and, when I saw him for the first time (which was at three o'clock), he was bringing up phlegm, although with great and painful efforts. He had thrown off all the bed-clothes, and was continually shifting his position in the bed in extreme agitation. The least breath of air made him shiver, and seemed to give him excessive uneasiness. His skin was cool; his pulse fluttering and indistinct. At times he spoke calmly, and appeared anxious to restrain (as far as he possibly could) the mental and bodily agitation under which he laboured. Leaving him for a time in the care of Mr. Alcock, I went to St. George's Hospital to make arrangements for

his reception there, in conformity to the suggestion of Dr. Hooper, as well as my own and his master's wishes.

On my return, I found him still excessively sick at stomach, and learned that he had brought up a little blood. He walked, with some help, down stairs, and was put into a coach. During the journey he was again attacked with sickness at stomach, and his efforts at vomiting were dreadful. He brought off phlegm, blood, and some matter having the appearance of coffee grounds. Just as the coach reached the door of the hospital, he fell into a convulsion-fit, which put a period to his sufferings and his life in less than ten minutes after being received into the ward.

Dissection.

The body was opened the following day (Wednesday, June 15), under the direction of Dr. Hewett, in the presence of Dr. Philip and a large concourse of professional gentlemen. The following were the appearances which presented themselves.

The spinal marrow throughout its whole extent was perfectly free of disease. There was some slight effusion of serum on the surface of the brain, and about three or four tea-spoonfuls of serum were contained within the ventricles. The

choroid plexus was turgid with blood, and two very small soft tumors were found attached to it.

The stomach and bowels were in a healthy state. The lungs were of a remarkably dark colour, as if gorged with venous blood*. The whole body, it may be noticed, had become livid with remarkable rapidity, and to a very uncommon extent.

The pharynx, epiglottis, and larynx—the œsophagus, for about the first three inches of its course —and the trachea, throughout its whole extent, appeared internally of a coffee-ground colour, or almost black. This blackness remained after the parts had been freely sponged. There was no thickening or swelling of the parts about the glottis. The structures were firm, nor could I detect any breach of surface in the affected membrane. I have since been informed, however, that an abrasion of the cuticular lining of the membrane was noticed about half an inch below the pharynx.

The inner coat of the aorta, and large arteries immediately proceeding from it was of a bright scarlet colour. The heart and pericardium were healthy.

The First Volume of the Transactions of this Society contains a most interesting account of a

* A gentleman present considered that the lungs were, in some parts, emphysematous.

case of hydrophobia by the late Dr. Marcet. The author there* states, as an apology for the details into which he enters, "that it is only by multiplying observations, and by diligently collecting descriptions of the disease, that we can hope to throw some light on its nature." A similar feeling induces me to submit this case to the notice of the Society, and to offer the following cursory reflections upon the pathology of this remarkable disorder.

Fully sensible as I am that a high degree of nervous irritation is the predominant feature of the symptoms during life, and that the appearances which present themselves after death (as hitherto observed) possess no common character, yet it is impossible, I think, in any reasonings concerning this particular case, to avoid associating together the *sore-throat* which characterized its early period, the *dread of water* which indicated its confirmed stage, and the peculiar appearances about the *throat*, which were demonstrated upon dissection. These phenomena tend to the conclusion that the symptom which gives name to the disease is directly dependent upon some form of inflammatory action in the larynx and pharynx, and that the true nosological situation of hydrophobia is in the genus cynanche. If such a view of the pathology of the disease should be confirmed by further observation, it would be a singular instance of

* Page 132.

fortuitous nomenclature. To no other variety of inflammation about the throat could the term *cynanche* be so appropriately applied.

That many objections may be taken to this doctrine, I am well aware. Such appearances about the throat as were witnessed in this case are far from being uniformly met with, even where the dread of water was most strongly marked, but it happens that in the only other case of hydrophobia which fell under my own observation (that of a stable boy treated by Dr. Chambers at St. George's Hospital in December, 1816), they were equally distinct; and, in Dr. Marcet's case, just referred to, the same thing occurred. "The pharynx", it is stated*, "was considerably inflamed, behind both the mouth and nose, and in the œsophagus there were several detached spots of inflammation at various distances in the course of its canal."

My object, in pressing the consideration of this subject, is to afford, if possible, some principle by which our treatment in future cases of hydrophobia may be regulated. It may be worth mentioning (though more as a matter of curiosity than of real importance), that four leeches were, in Dr. Marcet's case, applied to the throat, which bled freely, "to which circumstance the patient attributed his apparent improvement"†. There

* Medico-Chirurgical Transactions, Vol. I. p. 154.

† Ib. page 140.

can be no doubt that when the characteristic features of the disease are fully developed, no remedial measures are likely to be of any avail; but it is an important consideration that in almost all cases there is a *premonitory period* (generally lasting two or three days, but sometimes extending to five or even six), during which it is still possible that something may be done. In the case now detailed, it appears to have commenced on the Friday, and to have lasted till Sunday night. I am not aware that any measures have ever been tried at this period of the disease to avert the impending danger, but this may have arisen, sometimes from ignorance of the real nature of the disease, and as often perhaps from an unwillingness to admit it. I would venture to suggest, therefore, that, when a man has been bitten by a rabid animal, he should be closely watched about the end of the fourth week; and, on the first appearance of any marks of nervous irritation or uneasiness about the throat, those remedies should be adopted, of whatever kind, which the practitioner would have employed, had the real nature of the disease been unequivocally ascertained.

8, Upper John Street, Golden Square,
June 25, 1825.

ACCOUNT

OF

THE EFFECTS

OF

THE BITE OF A WILD JACKAL

IN A RABID STATE,

AS THE SAME OCCURRED IN THE DISTRICT OF

KATTYWAR IN THE EAST INDIES, IN 1822.

By M. HEWITT, Esq.

SURGEON, BOMBAY MEDICAL ESTABLISHMENT.

COMMUNICATED

By Dr. BABINGTON.

Read July 5, 1825.

IN the year 1822, the First Battalion Fifth Regiment Bombay Native Infantry, of which I had the medical charge, was proceeding on field-service with a regiment of Native Cavalry in Kattywar. The latter were encamped about a quarter of a mile from the infantry. One night I was roused by a considerable noise and bustle in the cavalry lines, which I attributed to some of the horses breaking loose from their pickets. Next morning I learnt, on inquiry, that, in that part of the lines chiefly occupied by the grass-cutters, they

had been much annoyed by the visit of a jackal, an animal very common in the neighbourhood of large villages in India. The night was dark, and the animal had got unobserved into the lines, and entered several huts of the camp followers, snapping and biting at every one he met with. Several of the men were roused by a bite of the animal either on their arms or feet, which were uncovered while asleep. The alarm was given, and the animal, after a chase up the lines, was at length killed; and this occasioned the hubbub I had heard, as before noticed. The bites of the animal had mostly drawn blood, but were very slight and superficial. Those I saw, being about a month after the incident, were like scratches, and dried up. The animal, I understood, was in a state of exhaustion, and much enfeebled from disease and starvation. It was not known to be mad, nor are the natives acquainted with the consequences of the bite of a rabid animal. The matter therefore passed off as a common incident of the day.

About a month after this occurrence circumstances presented tending to shew that the jackal was in a rabid state, and that hydrophobia resulted from its bites. Such of these as came under my observation I have to notice in the following cases.

CASE I.

My native hospital-assistant informed me that a young man was lying dead a short distance from

my tent, in the open fields. I went along with him to see the body, with a view to ascertain the cause of his death. The deceased, a native, was a robust young man who appeared to have died from suffocation. There was great contraction of the glottis, as if brought on by spasm. The throat was swollen, face rather flushed. No marks of violence being observable, his friends were called on and interrogated as to what information they could afford to account for his sudden death. They mentioned that lately he had shewed strange symptoms of madness, complained of a sense of strangulation when he attempted to swallow, and had a horror at the sight of water, and, fearful of being suffocated, he had before ran out into the open fields. On being questioned as to his having been bit by any dog, they replied he had not; but spoke of his being bitten in the face by the jackal on the night that one was killed in camp; before which he never complained. He had been gradually getting worse for the last few days past, and they did not suspect the cause.

CASE II.

A few days *previous* to finding this young man lying dead in the fields, I had a native, aged about 30, under treatment, labouring under extreme dejection and nervous excitement. The glottis appeared rigid, the throat was much complained of, deglutition difficult and painful. Con-

ceiving the case to be chiefly an affection of the fauces, local applications were made to the throat, and the usual remedies were ordered.

On the second day he refused to take any medicine, and his nervous irritability increasing, he was carried off in convulsions that same night.

My native assistant, who had never seen a case of hydrophobia before this, or known its symptoms, on the particulars of the former case being related in his hearing, now, for the first time, stated there was a great coincidence of symptoms in the two cases. He remembered the deceased native under treatment for an affection of the fauces, that he shewed a great dread of water, and would not swallow the medicine because it was in a liquid state, and that he was under frightful imaginations about trifles when disturbed, &c. I ordered him to inquire of the friends and companions of the deceased, if he had been bitten on the night in question by the jackal, and the result was that he had, and had shewn the part bitten to several, relating the circumstance.

CASE III.

The effect of the bites of the jackal in the above instances began to excite some attention, more especially when another native, a middle aged man, was found early one morning about this

time dead, and without any marks of violence about him. His appearance, from a few particles of blood found on the grass, led to a belief that he had died convulsed. Inquiry as to the cause was set on foot, and it was clearly ascertained that he had been bitten by the jackal.

CASE IV.

Some of those that had been bitten were now induced to apply for medical relief, when the symptoms shewed themselves. My native assistant informed me that a woman who had been bitten by the jackal was now suffering under symptoms somewhat similar to those observed in the preceding cases, and wished me to see her. I was glad to find an opportunity of arresting the disease if possible, and ordered her to be brought up immediately. She was under great anxiety, and very restless, had a spasmodic contraction of the glottis, great oppression at the pit of the stomach, and sense of suffocation; on being exposed to the air to look at her, her countenance shewed she was under great alarm, and she covered her face in a hurried manner. Her friends said she could not take any kind of drink, and could with difficulty be made to swallow any food. The symptoms had been coming on some few days previous to their applying for medical aid. She pointed to her throat and pit of the stomach, when asked where she felt pain or uneasiness. Being satisfied the

symptoms were those of hydrophobia, and that the affection of the glottis was the most dangerous, I ordered the patient to have her throat and epigastric region rubbed with strong mercurial ointment mixed with a small portion of camphor, and the friction to be kept up for an hour at a time, without regard to quantity expended; the throat to be kept warm with flannels after the frictions, which were to be as often as could be done without distressing the patient too much. To hasten the effect of the mercurial course on the salivary glands, ten grains of calomel, mixed in a little powdered sugar, were ordered to be sprinkled on the tongue, and given every eight hours till further orders.

To bring on a flow of saliva, and discharge from the salivary glands, a mixture of aqua ammoniæ, ol. oliv. and aq. pur. in the usual proportions to form a strong stimulating expectorant, was ordered to be given by tea-spoonfuls, which, it appears, was effected. These remedies were pushed as far as circumstances would admit, and on the third day, a flow of saliva was effected, which was the object in view. The mercurials were regulated and withdrawn as salivation advanced; and in proportion as the saliva ran from the mouth, the deglutition became less difficult, the dread of swallowing and the pain at the pit of the stomach wore off; and her mind became composed and easy as the danger was removed.

In the course of twelve days all symptoms were entirely gone; the mouth, however, remained sore for some time afterward. The woman was suckling.

CASE V.

A man, about twenty-five years old, applied for relief under extreme mental anxiety. His wild appearance and fears, and refusing to take some medicine offered him, the tremor he was in at the thoughts of swallowing, and the information that he was one who had been bitten by the jackal, confirmed my suspicion of his case being of the same description as the others.

He shewed the first symptoms about ten o'clock in the morning after he came to me, but had been for some days getting dull and melancholy. The plan of treatment was precisely as ordered in the former case, but I soon found the disease was much farther advanced, as deglutition was entirely suspended, and the least attempt to make him swallow brought on the greatest disturbance of the abdominal muscles and diaphragm, and he became almost frantic. He vomited slime and watery matter two or three times. He was glad to cover himself up from the air and the sight of objects, and he had a violent thirst. These symptoms increased rapidly, and he became so restless as to be

kept under restraint by attendants to prevent his running about and doing mischief. At intervals he was quite rational, and, in a hurried way of talking, assured me he could not, from what he felt, last out long. He was soothed, and the hopes of a cure held out by his becoming resigned and quiet; but, on the next day at four o'clock, the continual restlessness of the patient, and the "burning sensation of thirst", as he called it, had so exhausted him, that I despaired of his living long enough to get the salivary glands affected by frictions, which was all that we could do under his unruly and restless state.

The thirst being so intolerable, he was resolved to make a desperate attempt to get down some gruel, which, when he had got a spoonful in the throat, brought on so violent a convulsion as to carry him off. He was not in the least affected by the mercurial frictions, or the calomel he might have got down.

I regretted this failure very much. Had he lived long enough to have had a complete salivation, I should have had sanguine expectations of his doing well, from the result of the former case.

The same characteristic symptoms were conspicuous in all the five cases. The affection of the glottis was always predominant, and next that of

the pit of the stomach. Deglutition was always much dreaded and difficult; and great mental anxiety was present.

Three other persons presented themselves to say they had been bitten, and shewed the marks or scars of the bites, which (except in one instance which was a foul looking sore) had all dried up. No symptoms had appeared. They left their names and places of abode with my assistant, that we might be apprised, in case any should subsequently become affected.

The mouth and jaws of the jackal when killed were found to be covered with frothy saliva. The liver was examined and found quite diseased and rotten, with pus in some parts from small abscesses.

Blackheath,
June 20, 1825.

EXPLANATION OF THE PLATES.

PLATE I.

Represents the needle employed by Mr. Key in his Case of Axillary Aneurism, and described at page 11.

PLATE II.

Represents the appearances found on dissection in Dr. Elliotson's Case of Ulceration and Rupture of the Stomach, related at page 30.

Fig. 1. Inner portion of the ruptured stomach.
Fig. 2. Outer portion of the ruptured stomach.

PLATE III.

Represents Dr. Breschet's Case of Extra-Uterine Pregnancy, as described in pages 35 and 36*. The parts are represented of their natural size.

Fig. 1. *a.a.a.* The body of the uterus.

* The Council of the Medical and Chirurgical Society take this opportunity of informing the Members that for the English dress in which Dr. Breschet's Paper appears, they are indebted to the pen of their late secretary, Dr. Gordon.

b. The cavity of the uterus, containing Hunter's membrane, or the *membrana decidua.*

c. Cavity formed in the substance of the parietes of the uterus, containing the fœtus.

d.d. The fœtus with its involucra, and the vascular penicilli representing the placenta.

e. A vascular portion of the placenta still adhering to the uterus, and penetrating one of the orifices of the sinuses, which are spread over the parietes of the cavity c.

f.f.f. The Fallopian tubes with their fimbriated extremities. The tube on the left side is inserted into the uterus much below the cavity containing the fœtus, and does not communicate with it.

g.g. The ovaries.

h.h. The broad ligaments of the uterus.

i.i. The cervix uteri, open on its anterior surface.

k.k. The vagina, laid open through its whole extent.

Fig. 2. The ovum opened; the fœtus was a female; the chorion and amnion are distinctly seen; also the vascular flocculi of the placenta.

Fig. 3. A portion of the membrana decidua, seen from its uterine surface.

Fig. 4. The same membrane seen from the op-

posite side, where it may be compared to the exhaling surface of serous membranes, because, like them, it forms a shut cavity.

Fig. 5. A portion of the placenta, examined by a magnifying glass, shewing the orifices of the two sets of vessels composing the placenta.

PLATE IV.

Represents Mr. Hunter's Case of Fungus Hæmatodes of the Brain, as described at page 95.

PLATE V.

Represents Mr. Bremner's Instrument for carrying a ligature round deep-seated arteries, described at page 228.

Fig. 1. represents the instrument.

a.a.a. The silver canula.

b.b. The three springs which slide through it, one of which only is fixed to the handle (*d*) by a screw.

Fig. 2. represents the curve described by the springs, and the small tongue at the point (*c*) over which the ligature is passed.

Fig. 3. shews the handle of the instrument, the screw by which one of the springs is fixed to it, and the sheath which contains them, the dotted line marking the distance: the two unfixed springs play in the handle.

PLATE VI.

Illustrates Mr. Chevalier's Paper on the Ligaments of the Ossicula Auditus. (Pages 63, et seq.)

Figs. 1. & 2. Are views of the interior of the cavity of the tympanum; *Fig.* 1. from above and within, *Fig.* 2. from below.

No. 1. The interior convex surface of the membrana tympani.

2. The extremity of the manubrium mallei.

3. The head of the malleus grasped by the incus, and bound to it by a tense capsular ligament.

4. The long process of the malleus, or long tendon of the musculus externus mallei.

5. The nerve called the chorda tympani, crossing the root of the manubrium mallei, in the obtuse angle between it and the body of this ossiculum, on a level with the short process, and internally opposite to it, and upon the insertion of the tendon of the tensor tympani.

6. The conoidal or posterior process of the incus, by many implied as the extremity of the axis on which this ossiculum is supposed to move, acting as a lever.

No. 7. The long process, or articulating process of the incus.

8. The os orbiculare, or double ball-and-socket joint between the incus and stapes.

9. The stapes, seen in perspective, and having its base broken in *Fig.* 1, but in profile in *Fig.* 2., where it has been exposed, by breaking away the interior wall of the cavity of the tympanum.

10. The tendinous extremity of the tensor tympani, lying in its petrous sheath.

11. The tendon of the same muscle going off at a right angle, from the remnant of the interior wall of the tympanum, to be inserted immediately below the obtuse angle of the malleus: this tendon having shrunk, forms a knuckle at its angle in *Fig.* 2.

12. The tendon of the stapedius muscle entering the pyramid of the tympanum. This muscle has shrunk in drying, and *drawn aside* the articulating head of the stapes from its usual position, viz. in the direct line described by the corresponding articular surface of the incus in its movement.

A. A ligament attaching the whole of the exterior margin of the body of the incus to the wall of the cavity of the tympanum. This ligament is, in some

respects, a suspensory ligament of the incus: the general course of its fibres from the incus is upwards and outwards; but at the posterior part, backwards, as at the anterior, forwards.

B. The dried remains of a loose cylindrical ligament, which is situated as if to suspend the head of the malleus to the roof of the tympanum.

C. The tense capsular ligament, uniting firmly the malleus to the incus.

D, E. Two quadrilateral ligaments, restraining the head of the malleus within a certain distance from the exterior walls of the tympanum. The general course of these ligaments is downwards, outwards, and forwards.

F. A third restraining ligament, like the two preceding, and completing, with the body of the incus, more than a semicircle of attachments (6. A, D, E, F) which confine the head of the malleus from moving (primarily) inwards. The general course of the fibres of this ligament is inwards, forwards, and downwards.

G. Another quadrilateral ligament of the malleus, situated under the last, attached, on two sides, to the walls of the tympanum; on a third, to the reflected tendon of the tensor tympani; on a

fourth, to the neck, to the angle, and a small extent of the manubrium of the malleus. The general course of the fibres of this ligament is upwards, inwards, and forwards: its plane is at an acute angle with that of the membrana tympani.

H. A long ligament, oftener quadrilateral than triangular, the plane of which is at a still more acute angle with that of the membrana tympani, than is the last. The general course of the fibres of this ligament from the malleus, is downwards, backwards, and outwards. In *Fig.* 4. it is seen (as in its natural situation, when the membrana tympani is carefully cut away) united, and indeed continuous to a considerable extent with the ligament *K*.

I. The two capsular ligaments uniting the os orbiculare to the incus and stapes. These are remarkably more lax than the ligament *C*.

K. A remarkable ligament, arising (as is seen in *Figs.* 2. and 4.) from the angle and the commencement of the manubrium of the malleus, and from the interior margin of the ligament *H*. to be inserted into the long process, or articulating process of the incus.

Fig. 3. (Magnified like *Fig.* 4. by one half) shows the angle, or short process of the manubrium mallei, at a considerable distance from the superior margin of the auditory ring or process.

13. The exterior surface of the membrana tympani.

14. The meatus auditorius externus.

15. The substance of the auditory tube or process, continued so close to the insertion of the long tendon of the musculus externus mallei, as it is called, that this muscle can scarcely operate as a laxator upon the malleus and membrana tympani.

[The original drawing illustrating this paper having been accidentally mislaid, Plate VI. could not be prepared so as to appear in the present half Volume, but will be given in the next, with some supplementary observations.]

END OF VOL. XIII.—PART I.

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MEDICO-CHIRURGICAL

TRANSACTIONS.

VOL. XIII.—PART II.

G. WOODFALL, ANGEL COURT, SKINNER STREET, LONDON.

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ERRATA.

Page 281. After the name of DAVID GALE ARNOT, Esq., *for* M.R.C.I. *read* M.R.C.S.; and in the same page, *for* C. I. ROBERTS, *read* C. J. ROBERTS.

CASE

IN WHICH

A PIECE OF IRON

WAS FOUND

IN A CYST WITHIN THE THORAX,

WHERE IT HAD REMAINED FOR FOURTEEN YEARS;

By DAVID GALE ARNOT, Esq. M.R. C.S.

SURGEON TO THE HOSPITAL-SHIP GRAMPUS.

COMMUNICATED BY

C. J. ROBERTS, M.D.

Read November 9, 1826.

WILLIAM HUNT, aged forty-four, was admitted on board the Seaman's Hospital on the 23d February, 1826, with severe inflammation of the contents of the thorax, and died in a few hours. On admission, he stated that in 1812 he received a wound in his left side from a musket-ball, which was still in his chest, and that since that period he had been subject to violent inflammations after exposure to wet or cold. The present attack came on a few days ago after arriving from sea, where he had been much exposed to cold.

Sectio Cadaveris.

On opening the thorax the attention was directed to the left side, principally for the reason that there was a very obvious depression observable on the surface of the third rib. Continuing the examination, which was pursued with extreme caution, a cyst was seen, which was found to contain a piece of iron hoop about an inch in length, and of the form of a crescent. The lung of that side was completely hepatized. The upper part of the trachea and bronchia contained pus. The other lung was comparatively sound, inasmuch as the bronchia of that side did not contain pus; neither was that lung hepatized. — There were slight adhesions.

CASE

OF

INJURY OF THE HEAD,

By DR. ROGERS.

WITH REMARKS

By MR. TYRRELL.

Read December 13, 1825.

MARK GEORGE, ætat. 19, on Sunday morning July 10, fired off a gun at some crows, which, being overcharged, burst, and injured his face and head in a most dreadful manner.

He was able to walk some hundred yards immediately after the accident, but at length, being overpowered by loss of blood, he fell, and was conveyed to a neighbouring house. Shortly after he became convulsed, and was totally deprived of his senses.

In this condition I first saw him, when the assistance of three or four persons was required to keep him sufficiently still to enable me to examine a wound of considerable extent on the forehead, just above the centre of the left superciliary ridge.

After enlarging the external wound I discovered an aperture, about the size of a crown piece, in the frontal bone, through which a considerable quantity of the substance of the brain was oozing, and as much as a table-spoonful adhered to the hair and integuments around.

Having fully exposed to view the nature of the injury, I gently carried my finger round the jagged edge of the bone, and introduced it within the aperture, in order to ascertain whether any fragments of bone were lodged there; but as far as I could feel I did not discover any.

The wound was lightly dressed, and about sixteen ounces of blood were taken away from the arm, when he became more composed, and passed a tolerably quiet night. Both the eyes were closed from tumefaction of the palpebræ, and the face was also much bruised and swollen.

The next morning he was more tranquil, and appeared sensible when questions were put to him; the bowels were properly attended to, and saline medicines with antimony administered every fourth or sixth hour. Fomentations were applied to the face.

July 12. — Symptoms favourable, except the pulse, which, although not exceeding forty, was extremely tense and full. Fourteen or sixteen

ounces of blood were therefore taken from the arm, and a purgative given. His nourishment consisted of tea and thin gruel.

July 13.—The pulse was somewhat quicker and softer. The dressings were removed altogether, and a soft poultice applied, except immediately over the wound, where a light dossil of lint with a pledget of cerate dressing was placed. The surface of the skin was moist and temperate, his sleep undisturbed, and he appeared quite rational and collected in his answers to the various questions put to him by the attendants.

July 14.—Went from this period until the 21st with little alteration in his symptoms, when, from fresh accession of febrile heat and irritation, it was judged expedient to repeat the bleeding from the arm to the amount of ten or twelve ounces, and, to counteract the stimulus excited by the heat of the atmosphere at this time, the room was kept as cool as possible, and his body and extremities were frequently sponged with cold vinegar and water.

July 22.—Passed a better night, and appeared altogether more comfortable. The wound was lightly dressed in the centre, and the surrounding parts continued to be fomented and poulticed three or four times in the course of the day: the fœtor from the wound was great, and the dis-

charge very copious, but the surrounding soft parts had a healthy aspect.

July 25.—Symptoms generally favourable, no increase of heat, pulse tolerably soft, sleep almost natural, bowels regularly relieved, perfectly sensible, but the discharge from the cavity very abundant at each removal of the dressings.

July 27.—More pain in the head, bowels not relieved, some stiffness in the lower jaw, greater reluctance in answering questions.

July 28.—The bowels relieved by a purgative [illegible] stiffness of the jaw gone off, more collected.

July 29.—Able to take more nourishment than [illegible] the last two or three days, but still some [illegible] of choking in the throat, and difficulty in swallowing; the discharge from the wound profuse, a little inclination to drowsiness, but nevertheless perfectly sensible; pulse about sixty, soft and regular.

August 1.—The difficulty of deglutition nearly subsided, and he was able to take a draught of port wine and water, broth, &c.

August 4.—The discharge continued very abundant, and the bodily strength apparently af-

fected by it; but by improvement in diet, and giving pulv. cinchonæ ℈j every six hours, no other unpleasant symptom followed.

August 4.—Upon touching a point within the cavity, thinking it looked like a portion of bone, I was astonished that it resisted the probe like a harder substance than bone, and upon examining it with my finger I thought it felt like a portion of iron. I attempted to get hold of it with a pair of common forceps, but it repeatedly slipped from my grasp, and as it appeared to give the boy excessive pain (like drawing out his eye, as he expressed it) I desisted.

August 5.—I more distinctly found that the substance was iron, and that the projecting part of it resembled a screw. I now procured the assistance of four persons, in addition to that of Mr. Smith, a medical practitioner who attended with me, and after many efforts and considerable manual exertion, I succeeded in removing the substance from the head. I found it impossible to get sufficient hold of it to extract it by means of the forceps, I therefore made use of the common trephine elevator, with which I raised it from its bed, when the subsequent part of the operation was very easy. The body extracted proved to be the breach-pin of the gun, consisting of solid iron, three inches in length and exactly three ounces in weight, and of the form here delineated.

I left him tolerably quiet and easy, betraying no additional unfavourable symptoms, the wound was dressed light and simply. The operation did not occasion any hæmorrhage.

August 7.—For many days from this time no interruption occurred to his gradual improvement; but two or three small portions of bone came away with the dressings.

On the 16th he was carefully removed to his own home about a mile distant: he bore the removal without much fatigue.

August 25.—Going on well, the cavity is gradually filling up, and the adjacent parts look healthy; he is able to sit up an hour or two in the day.

September 4.—Remains in an improving state, free from any stupor, weight, or lightness of the head; is able to walk about a little in the house; sleeps well; bowels regular, without the assistance of medicine; appetite good, and perfect recovery appears certain at no very distant period.

September 27.—Very much improved; some more small pieces of bone have come away, and probably more will be thrown out before the wound closes.

November 8.—The boy has continued in a favourable way, a few more small portions of bone have separated from the wound. He walks about, but is not allowed to exert himself in any way.

November 20.—A further separation of bone has taken place, but yet not altogether sufficient to make up the quantity destroyed, more however appears forthcoming. The boy continues extremely well.

December 10.—The boy is now in good health, no further exfoliation has taken place since the last report.

The following particulars have been obtained from the boy and from his mother, who has closely attended him throughout his confinement from the accident :—

The boy says that he remembers hearing the report of the gun when he shot at the crow; also that his little brother (who was with him at the time) walked with him into the yard, but that he was obliged to stop several times from faintness. He remembers his father coming to him in the yard.

Of what took place for the space of a week after his being taken into the house, he does not appear to have any recollection, although he certainly answered questions, put to him after the first day from the accident, correctly and consistently.

After the first week he readily knew persons who came to see him by their voices, when his eyes were perfectly closed from swelling of the palpebræ.

The sight of the left eye is totally destroyed, but that of the right remains perfect. The smell and hearing are both perfect, which his mother has had frequent opportunities of ascertaining, and she has not found any defect in regard to his memory or general mental faculties since the accident. There does not appear to be any difference between the two sides of the face and head, in point of sensation or power of motion.

REMARKS ON THE PRECEDING CASE,

By F. TYRRELL, Esq.

SURGEON TO ST. THOMAS'S HOSPITAL.

Many cases are recorded in which large portions of the cerebrum have been lost without any immediate or subsequent derangement of the mental or corporeal functions; but I am not aware that any case has been attended with the lodgement of so large a foreign body in the cavity of the cranium, for so long a period as twenty-seven days, with the production of so little mischief.

In the first instance we may easily suppose that a portion of the cerebral mass, adequate to the

bulk of the breach-pin, escaped from the aperture in the frontal bone immediately the injury was inflicted, and that thus the surrounding parts of the brain could not suffer from compression; but it appears strange that the violence which must have been necessary to force so large a body into the cranium should not have produced more concussion of the cerebral mass than seems to have taken place; perhaps the loss of blood soon after the injury may have prevented the appearance of more urgent symptoms.

The position in which the breach-pin lay was with the screw to the aperture, and the other extremity towards the ear of the same side; the long limb was placed outwards, the short one inwards. From the length and situation of the breach-pin it appears certain therefore that both the anterior and middle lobes of the left side suffered; the former must have been very extensively lacerated at its anterior, inferior, and outer parts, the latter probably at its outer part only: thus the mischief appears fortunately to have been confined to parts of the cerebrum unconnected with any nerves essential to the support of the vital functions.

When we consider that not only this solid iron body, but that numerous irregular portions of bone were also lodged for so long a time in the substance of the brain and pressing upon its membranes, it does seem most extraordinary that the

boy should have experienced so little inconvenience or suffering.

From the force necessary to extract the iron, I think it not improbable that the extremity of the long limb had penetrated the skull at the lateral part, and that it was thus fixed. Had it been perfectly loose in the cerebral mass, I should imagine that its motion, when the boy changed the position of his head, must have occasioned great suffering, and have given rise to symptoms much more severe than those experienced.

The next extraordinary feature in this case is the trifling effect occasioned by the removal of the breach-pin; the surrounding parts must in a degree have accommodated themselves to its presence, and from a fresh disturbance I should have expected considerable irritation and inflammation to have followed. As the hæmorrhage produced by its removal was very trifling, it could not have had any effect in preventing unpleasant symptoms.

CASE

OF

INFLAMMATION

OF

THE ILIAC AND FEMORAL VEIN,

WITH AN ACCOUNT

OF

THE APPEARANCES AFTER DEATH.

BY CHARLES F. FORBES, M.D.

Read February 27, 1827.

FRANCIS MERCHANT, æt. twenty-six, a journeyman printer of intemperate habits, was conceived to be labouring under pulmonary disease, which was accompanied with swelling of both ankles.

The swelling of the right ankle however gradually subsided, whilst that of the left, about a month previous to his decease, extended upwards, and increased, attended with pain about the ankle, calf of the leg, knee, ham, groin, and lower part of the abdomen. The pain in the knee was so con-

siderable, in the early stage, as particularly to engage the attention of the mistress of the house in which he lodged, who thought he must have hurt the knee. Together with these symptoms the whole limb became hotter than the other, and tender upon pressure.

When I first saw this patient on the 31st of October, a week before his death, I found him in the last stage of pulmonary consumption, having cough, purulent expectoration, diarrhœa and considerable emaciation. The whole of the left lower extremity was now enlarged to double its natural size, the swelling extending from the foot to the crural arch. Everywhere it pitted upon pressure, but it was no longer painful when touched, except at the groin, where uneasiness was still experienced.

The colour of the skin of the limb was whiter than natural, and presented an appearance perfectly similar to that observed in common anasarca. The subcutaneous veins above the ankle were distinctly marked, being distended with blood. The patient, who had lost all power of motion in the limb, died on the 8th of November.

On the following day Mr. Grainger examined the body, in the presence of Dr. Macann, several other gentlemen, and myself. An incision was made along the inner part of the thigh, commencing

at Poupart's ligament, and continuing below the knee. On exposing the vena saphæna major and its branches, these veins were observed very much distended; and being laid open, were found filled with coagulated blood, but there were no appearances of disease of their coats. The cellular tissue of the whole limb was very much infiltrated with a limpid fluid, a quantity of which escaped from the incision of the integuments. The lymphatic vessels were quite healthy; and the lymphatic glands in the groin were rather enlarged.

The deep-seated veins were next examined, and presented a similar appearance to that of the superficial veins; the femoral vein being tense, and filled with coagulated blood.

The dissection was continued so as to expose the left iliac veins. The trunk of the external and common iliac vessels were found even more distended than the femoral vein. The common iliac vein had an unnatural colour, approaching to a greenish hue; and it seemed as large as the inferior cava. The distension of this vessel suddenly terminated at that part where it is united with the right common iliac vein. The left internal iliac vein was filled with blood for about two inches of its course, and the rest of it appeared natural.

The femoral and iliac veins on the right side were nearly empty, and quite healthy in their appearance, forming a strong contrast, when com-

pared with the gorged and distended state of the veins on the left side.

On laying open the upper part of the femoral vein, as well as the external and common iliac veins, they were found filled with a coagulum, of much firmer consistence than is usually met with in healthy veins; and had much of the fibrous appearance of the blood which is found contained in aneurismal sacs. On separating this coagulum, a thin but distinct membranous layer was seen adherent to the internal coat of the vein, and it required some force to separate them. The femoral vein, which was examined as far down the limb as the triceps muscle, was found in the same condition.

The morbid appearances observed in this instance, were very similar to those which have been described by Dr. Davis, in his paper on Phlegmasia Dolens, inserted in the 12th volume of the Transactions of this Society. Had the subject of the disease been a woman, in the puerperal state, would it not have been considered phlegmasia dolens?

Morgagni, letter 56, art. 10, in treating of disease of the iliac veins, relates the case of a woman, whose left limb was œdematous; and upon examining the body after death, he found the left iliac vein filled with a coagulum, as he terms it, of a polypous nature, the canal being quite obliterated

by it. The crural vein was at least a third part narrower, and appeared to have been in that state for a considerable time.

I lately attended a woman, 63 years of age, the mother of a family, who, several months previous to my seeing her, was attacked with swelling and lancinating pain in the right foot, which extended upwards to the groin, where, as well as in the knee and in the calf of the leg, she experienced considerable pain.

On my first visiting this woman, on the 20th of December, I found the whole limb, from the foot to the hip, swelled to double its natural size, colourless, and pitting upon pressure. The urine was secreted in natural quantity. Cupping and blistering, in the course of the femoral vein, were had recourse to, which treatment was followed by a very considerable reduction in the swelling. A bandage was afterwards applied. The leg and thigh are now of their natural size, but remain without power; the foot is still slightly œdematous.

Argyll Street, February 26, 1827.

CASE

OF

HYDROPHOBIA,

AND THE

APPEARANCE OF THE BODY ON DISSECTION,

FOURTEEN HOURS AFTER DEATH,

WITH SOME REMARKS

ON

THE NATURE AND TREATMENT

OF THE DISEASE.

BY

ANTHONY TODD THOMSON, M.D. F.L.S., &c.

Read November 28, 1826.

FROM the time of Cælius Aurelianus, who first accurately described* the symptoms arising in the human frame from the bite of a rabid animal, to the present period, although much has been written on the subject of Hydrophobia, yet no advancement of our knowledge respecting the seat and nature of that disease has been gained, and no method of treating it has hitherto proved successful†. It is not easy to account for the sterility of

* De Morbis Acutis et Chronicis, Lib. III. c. 9.

† Many ancient writers boast of having effected cures; but

a field so assiduously cultivated; but, as far as regards our own times, much of the disappointment of our hopes may be attributed to the causes stated by Boerhaave, "inanis jactantia multorum specificorum, et neglectus methodi ex historia mali excogitatæ."* Whether the statement of the following case, and the remarks upon it, which I am about to lay before the Society, are calculated to improve our knowledge of Hydrophobia, others must determine; my object is to attempt such a theory of the disease, founded upon the recorded experience which we possess, as will, at least, enable us to approximate to a decided and methodical treatment of this frightful malady.

CASE.

Augustus Lange, a fine intelligent boy, eight years and a half old, the son of a tailor residing in Pond Place, Chelsea, whilst walking along the street, about nine o'clock in the forenoon of the

much doubt is thrown upon these by the manner in which they are detailed. Thus, Galen, who asserts that pulvis cancri *fluviatilis* had effected cures, says that it is to be prepared by burning the crabs alive on a plate of copper, after the rise of the dog-star, or when the Sun enters Leo! Fulgosius, who regards the dog-rose (κυνόῤῥοδον) an infallible remedy, reports that the secret was revealed to man from Heaven in a dream. *Gemma Cosmocrit.* Lib. V. cap. 6. Palmarius relates a case of Hydrophobia in several children of the same family, to whom, he says, the disease was communicated by the father, who was dying of it, kissing them just before he died. De Morbis Contagiosis, p. 166.

* Aphor. 1141.

28th of September, 1826, was attacked and bitten on the naked hand by a cat which suddenly rushed from a house *. The body of the cat having been destroyed soon after it bit Master Lange, was dissected and examined by Mr. Gaskell, surgeon to the parish of Chelsea, and from the appearances which presented themselves, that gentleman was satisfied that the animal was rabid. The wounds caused by the bites, three in number, two on the back of the hand, and one on the back of the thumb, were freely excised at noon, on the day after the accident, and were completely healed in nineteen days. On discharging the patient, Mr. Gaskell imposed strict injunctions upon his father to apprise him, immediately, if any unfavourable symptoms should supervene.

On the 7th of November following, twenty days after the wounds were healed, Mr. Gaskell was desired to visit Master Lange at ten o'clock in the forenoon. He was informed that the boy had been

* Many instances are recorded of the disease being produced by the feline species. See Lusitanus de Prax. Admir. Lib. III. Obs. 87. Schenkius, Lib. VII. Obs. 9. de Ven. ex Animal. Amat. Lusit. Cent. VII. Curat. 65. Baccius in Prolegom. Ven. et Antid. p. 16. The following experiment demonstrates that it may occur spontaneously in cats. Professor Rossi confined a cat during four days without meat or drink. On the evening of the fourth day, two dogs were introduced into the room; the cat bit them both, the one on the nose, the other on the back. They both became rabid. Edinburgh Journal of Medical Science. Vol. III. p. 202.

taken ill on the 5th; but, as his disease was considered to be a simple cold, no particular attention had been given to it. Mr. Gaskell found his little patient in a state of great agitation and alarm, and impressed with the idea that he could not drink, nor even endure the sight of water; and the mere mention of it produced convulsions in the muscles of deglutition and respiration. His pulse was 120; his tongue covered with a brownish fur; his eyes were wild, and the whole countenance indicated extreme anxiety and distress. When exposed to a current of air he was instantly affected with convulsive sobbings. He frequently placed his hand upon his stomach, where he said he felt pain; and he complained of pains also in the elbow and the shoulder of the arm, the hand of which had been bitten; yet the cicatrices of the wounds, which had remained easy since they were healed, were not now] at all painful, even when they were pressed. Perceiving that the sight of various kinds of food, which were in the room, did not affect the patient, Mr. Gaskell persuaded him to eat a small piece of toasted bread, which he swallowed easily, and to take a little warm gruel in a tea-spoon, but this was swallowed with difficulty, and he complained that it was cold. To obviate this objection, some hot water was added to the gruel, and he was urged to swallow a few more tea-spoonfuls, which was not effected without a great effort. A little gruel being spilt upon his lips and chin, he

was slightly convulsed, and he again complained of the coldness of the gruel.

As the bowels of the boy had not been moved since the previous day, Mr. Gaskell ordered him to take, directly, a powder, consisting of three grains of Calomel and seven grains of Jalap, and to repeat it every fifth hour, until he should have been freely purged. Mr. Gaskell also enjoined quiet, and a strict antiphlogistic diet. He now requested my assistance in the treatment of the case.

At three o'clock, p.m. I accompanied Mr. Gaskell to the residence of the little sufferer. He was in bed. On our entering the apartment, he turned upon us a countenance strongly expressive of terror and anxiety. He complained greatly of the uneasiness caused by the agitation of the air on opening the door of the room, adding, that "it took away his breath"; and he spoke in a hurried manner, in the midst of sobbings, resembling those convulsive respirations which are often experienced on going into the cold bath. These returned whenever the air was agitated by any one moving in the room, and were produced in a slighter degree when I blew gently upon his face without his perceiving what I was doing. His intellectual faculties were perfectly active, and he answered the questions put to him readily and sensibly. He said that he was now free from pain;

but that he could neither bear any cold air to blow upon him, nor any person to breathe upon him, as under either of these circumstances a sense of suffocation was induced. The convulsive sobbings were renewed even upon the mention of water; and when it was brought to him in a cup, he averted his face and requested that it might be taken away. The same antipathy was displayed towards a cup of gruel, yet he complained of thirst, and took gruel readily from a tea-spoon; but it was swallowed in a hurried manner, and with a convulsive effort, whilst his eyes seemed starting from their sockets. The pupils of the eyes were dilated, but were sensible, although not offended by the impression of light. The tongue was coated with a white mucous fur. The bowels had been moved three times by the Calomel and Jalap which Mr. Gaskell had prescribed. The pulse was 120, but was neither hard nor full.

On examining the parts which were bitten and excised, the cicatrices appeared fuller than they ought to have been, but they were not more florid than usual; there was no inflammation around them, nor were they painful on pressure.

As it was important to fix, at once, the method of treatment to be pursued, and as Mr. Gaskell agreed with me, that it would be only productive of loss of time to adopt any measure which had been tried and had failed, we determined to try

Opiate frictions externally, on the ground that Opium often exerts a more powerful influence in allaying irritation, removing spasm, and producing sleep, when applied to the surface, than when taken into the stomach; and we agreed at the same time to administer the Hydrocyanic acid, in as large doses as the strength of the little patient would permit. The following liniment was therefore prescribed:—

℞ Opii ʒij
Olei Olivæ f℥iij
Tere optime, ut fiat Linimentum, cujus f℥ss, spino dorsi et thoraci, 3tiâ quâque horâ, fricanda.

The bowels were ordered to be kept open by means of a powder containing five grains of Calomel and one-fifth of a grain of Tartar-emetic, to be taken every sixth hour.

Nine o'clock, p.m.—Our little patient appeared more composed than at our former visit. He had taken two of the powders; the bowels had acted freely, and the last stool was slimy, of a dark olive hue, and very fœtid. He was greatly oppressed with flatulence, which frequently induced the sensation that the bowels were about to act, but wind only was passed. His pulse, at the commencement of our visit, was 120; but in an hour afterwards, it rose to 138, apparently from his being hurried by the questions which we put to him: it was soft throughout. The convulsive sobbings

were less violent, but were still induced, if his mother's breath fell upon his face, or if any one touched him. He had been twice rubbed with the liniment, to the use of which, however, he objected, as it excited convulsions in the same degree as cold air. He complained of slight headache; and his mother stated, that frequently he exclaimed that he could not breathe, and prayed to have the door open; and at other times, he complained with equal bitterness of cold. She stated also that he could not lie down without the convulsions recurring, although, from feeling very drowsy, he was desirous of going to bed; that he could not remain long in one position, but frequently demanded, in a quick, peremptory manner, to be instantly placed in a different position; and he would cling frequently to his mother's neck as if he dreaded something; yet, when questioned respecting the cause of his alarm, he replied that he knew not what made him afraid. The head was not hot; the skin was soft, and of a moderate temperature. I persuaded him to take a few teaspoonfuls of gruel, which were still swallowed with such an effort that the whole powers of volition seemed to be directed to the muscles of deglutition. He did not spit at this time, nor did there appear to be an increased secretion of saliva. The use of the Prussic acid was postponed.

8th of November, eight o'clock, a.m.—Our patient was out of bed, sitting on his mother's knee.

He had slept for three quarters of an hour during the night; and when questioned as to the state of his feelings, he said he was better, that the headache had left him, and that he was free from all pain. His countenance was more composed than on the preceding evening; and although the convulsive sobbings were still excited by the least agitation of the air, yet they were less severe than yesterday. His bowels had acted six times during the night: the motions were scanty, but more natural in aspect; the urine was not high coloured, but clear, and sufficient in quantity. His head was cool; the skin agreeable to the touch, both as to softness and temperature. The tongue was still much furred, but clean at the edges, which were very red; and the pulse was soft, and only ninety-six. A blister had formed on the inside of his lower lip, which teazed him; but he was otherwise cheerful, and his mother said that he had been singing, according to his usual custom, early in the morning. He had also requested that some fluid might be given to him during the night, but he would take it from a tea-spoon only. I requested him to take some gruel, to which he assented, but the idea produced a slight attack of the sobbings; and he still swallowed the gruel in the same manner as before, but neither so eagerly nor with so much apparent effort, nor with so great a protrusion of the eyes. Touching the face with a finger still excited the convulsions, but less strongly than during the last night.

On account of the apparent improvement, the use of the Prussic acid was postponed; but the opiate frictions were directed to be employed every third hour, and a few drops of the compound spirit of Ammonia in a tea-spoonful of Camphor mixture to be taken as often as the patient would be prevailed upon to take the mixture.

Eight o'clock, p.m.—The patient took one dose only of the spirit of Ammonia, and was violently agitated after taking it. He has been, indeed, extremely restless since taking it, complaining sometimes of cold, sometimes of heat; and at one period he said he was so hot that he wished to go out into the street. He is still greatly distressed if his mother, on whose knee he sits almost constantly, breathe on his face; and is ever anxious to change his position. Sometimes he will stand, sometimes be seated; now desiring to be placed in a chair that his back may be supported, and yet, in a few minutes after expressing his satisfaction at being so placed, and saying, "yes, that will do", again returning to his mother's knee. He starts frequently; gazes timidly around; says that he hears bells ringing in his ears, then sighs and exclaims "Oh, mother!" In the afternoon he had a degree of delirium accompanying the paroxysms of convulsions, during which he spoke frequently, and with horror, of the cat by which he was bitten, and threw about his arms in a manner which frightened his parents; and his mother

fancied that he had snapped at her. He had been perfectly sensible between the paroxysms, and had requested his mother to be careful lest he should do her some injury in his struggles.

He has had several scanty stools since our former visit; the urine is milky, and he is still much oppressed with flatulence. He has had no sleep, and has complained occasionally, even during this visit, of his head; yet, when I inquired where he felt pain, he replied "nowhere." The pulse was 120, small and sharp, and intermitting once in every twenty beats. I poured some water from a tea-kettle into a jug, and from this into a basin, during which he averted his head with an expression of horror, and requested that I would not do so again, as he could not bear to see water, for it made him cold. His tongue was more coated than in the morning, and he complained of thirst, asking frequently for warm gruel, which he would not take, however, except from a tea-spoon, nor until after his mother had tasted it, in order to ascertain if it were warm. He took a tea-spoonful of gruel whilst he was standing on the floor, but before tasting it he desired his mother to raise the spoon above his eyes; then opening his mouth to receive it, said "now", and swallowed it as if he would have bitten the spoon in two, and was instantly so much convulsed that he must have fallen to the ground if he had not been supported. He says that when he attempts to drink any cold li-

quid, it causes a severe but transitory pain under the sternum. His bowels have been less disturbed, and they are not tense.

Mr. Gaskell and myself agreeing that the use of the Prussic acid should no longer be delayed, we directed one drop of it to be given in a tea-spoonful of gruel every fifteen minutes. After the first dose, which Mr. Gaskell administered to the boy, the convulsions were evidently diminished in power, and the patient felt so much easier, that he requested to have another dose of it, even before ten minutes had elapsed. Another dose was given; and was followed by a similar degree of relief; it was therefore ordered to be continued; and with the view of procuring sleep, the following enema was directed to be administered at midnight.

℞ Opii ℈j,
Olei Olivæ f℥vj,
Olei Succini f℥ij,
Decocti Avenæ f℥iij :
M. ut fiat Enema.

The pediluvium was also ordered to be used.

9th November, 8 o'clock, a.m.—The enema was not administered, nor was the pediluvium used, for our poor patient expressed so much horror at the sight of the water, that he could not be prevailed to put his feet into it. Mr. Gaskell saw him at ten o'clock, at which time he had taken six drops of the Hydrocyanic acid. He remained some time

with the boy, and gave him two drops more; and ordered his assistant, Mr. Harness, to see him at midnight, and to give him fifteen drops of tincture of Opium, if he appeared restless. This opiate was given, and was twice repeated in the course of the night, but it produced no sleep, and the poor sufferer was alternately in and out of bed twenty times. No convulsive sobbings recurred, however; and he drank freely towards morning, from a cup, for the first time since he had been ill.

On entering the apartment, I was struck with a change in the countenance of the boy. His features were composed, and the eye was natural; but his face was pale, the cheeks were of a purplish hue, and the lips livid. The pulse was 130, and so small as to be scarcely felt; yet he replied promptly to every question, and his arms and legs were in constant motion, not spasmodic but voluntary. He was now, however, unable to stand without support, and was so irritable and impatient that he kept his father and brothers in constant employment, in complying with his numerous whims. His tongue was rapidly becoming cleaner, and his bowels were much less irritable: the urine, however, still deposited a copious white sediment. The hydrophobic symptoms had rapidly abated; he could drink freely, with very little convulsive agitation, from a tea-cup, and complained less when he was breathed upon; and although he said that he felt uncomfortable when his head or face was touched, yet

this was not followed as before, by the convulsive sobbings.

The state of the pulse, the pallidness of the face, and the cold, clammy state of the hands, determined us to discontinue the Prussic acid. Our patient was ordered to take a table spoonful of strong white wine whey every half hour, until the pulse should rise; and to take Beef-tea, and any light article of diet, ad libitum.

Twelve o'clock, noon.—Mr. Gaskell, in visiting him at this hour, found him in a restless state, which had induced his parents to repeat the Hydrocyanic acid, contrary to our orders. He had eaten six oysters and some toasted bread; had drunk freely of the wine, and also of some porter. Mr. Gaskell gave himfifteen minims of Laudanum, and strictly forbad the repetition of the acid.

Four o'clock, p.m.—I visited our interesting patient, accompanied by Mr. Gaskell. He was perfectly composed, and free from every hydrophobic expression. His pulse was still feeble, but he could support himself better than in the morning; his tongue was cleaner, and his countenance was in every respect natural. He drank some wine out of a cup, without the least convulsive effort, and said that he felt quite well; and indeed our hopes of the favourable termination of the case began to

brighten. The wine and light diet were ordered to be continued.

Eleven o'clock, p.m.—The gleam of hope which had dawned in the early part of this day, vanished the moment I entered the apartment; for every bad symptom had recurred, and the convulsions were now general, and returned every two minutes, without any obvious exciting cause. They began, generally, with a sudden start and wild look; then tossing about of the legs and arms ensued, terminating by the face being bent down almost to the feet, or emprosthotonos, and by an attempt to bite his own clothes. These symptoms did not recur until seven o'clock in the evening, and they have gradually increased in violence. During the convulsive paroxysms, there was evidently delirium; but the attention could instantly be roused. Whilst it continued, he generally used the expressions: "See, there it goes! put it out;" and on being asked "what he wished to be put out," he replied, "the mad cat." During the intervals of these paroxysms, which, unless brought on sooner by the sight of water, returned every four or five minutes, he was perfectly collected. An excessive secretion of tenacious mucus was now constantly hawked up from the throat, and spit about the room. The struggles, which were often so violent that his father could scarcely hold him, were nevertheless lulled when a drop of the Prussic acid, in a tea-

spoonful of gruel, could be forced into the stomach, and the interval was more composed and extended. The pulse was scarcely perceptible.

We agreed to continue the acid, to support the vis vitæ with wine, given as frequently as it could be got down, and to continue the opiate frictions, which had been used throughout. He had had no sleep for upwards of forty-eight hours, and the convulsive paroxysms continuing to increase in frequency, until there was scarcely any intermission, except after the exhibition of the Prussic acid, he expired at a quarter past two o'clock this morning, the 10th of November. Mr. Gaskell had quitted the house a few minutes only before the event happened. The quantity of Prussic acid taken, was sixteen drops in the eighteen hours during which it was administered. Permission was granted to inspect the body, which was done fourteen hours after death.

Dissection of the Body.

The body, externally, presented no unusual appearance, except an ecchymosis on the lower portion of the face, which might have arisen from the bruises caused by the convulsions. There was, however, a greater rigidity of the extremities than usual, and the body exhaled a peculiar fœtor.

The first object being to examine the state of the spinal cord, an incision was made from the nape of

the neck to the loins; and the vertebræ on each side of the spinous processes being sawn through, the cervical portion, and part of the dorsal portion of the medulla spinalis, were exposed. The whole of the cellular membrane between the theca vertebralis and the parietes of the canal was loaded with suffused blood, which, in several places, lay in black coagula. See *a. a. a. a.* fig. 1. Six inches of the cord, from the third cervical vertebra to the fifth dorsal, being removed, and the dura mater slit up, the vessels of the spinal cord were seen turgid, *a. a. a.* fig. 2., particularly those which accompany the dorsal nerves.

On opening the cranium, the meningeal vessels were more turgid with blood than is usual, but certainly not so great as to indicate inflammation; nor were there any bloody points seen in the divided substance of the brain, such as present themselves in states of previous great excitement of that organ. The ventricles were empty: the choroid plexus rather more turgid and darker coloured than common; and, on the base of the brain, particularly in the pia mater covering the pons Varolii and the medulla oblongata, there were evident symptoms of inflammation having affected that membrane. The lungs were gorged with dark-coloured blood, but in other respects healthy; as was also the heart and the pericardium. The vessels accompanying the left phrenic nerve were turgid with blood: those of the right perfectly natural.

The larynx displayed a slight blush, which deepened on the outer surface of the epiglottis, and still more so in the inner surface. The lining membrane of the trachea was also slightly redder than usual. The pharynx shewed evident traces of inflammation; but there was no unhealthy appearance in the œsophagus. There were several patches of ecchymosis in the stomach; the liver, spleen, pancreas, and intestinal canal were apparently in a healthy state.

REMARKS.

In this case, as in all the recorded cases of disease arising from the bite of a rabid animal, a considerable time elapsed between the infliction of the wound and the appearance of the hydrophobic symptoms. Reflecting on this fact, two queries present themselves to the mind, respecting the state of the virus in that interval: 1. Whether any change of action, sufficient to generate a poison similar to that left in the wound, takes place in the vessels of the part? 2. Whether the virus be absorbed into the system immediately before the accession of the disease?

I am not aware that any experiments have been instituted to ascertain the object of the first query; and if, in the absence of facts, we may reason from analogy, I am disposed to doubt the accuracy of

those observations by which it has been inferred, that a fluid is deposited under the cicatrix. Nothing of this kind was found on the most careful examination, in the case before us; and, if we reflect that, in inoculated Small-pox and Cow-pox, in Scabies, in Syphilis, and in other diseases, excited by the introduction of morbid poisons into the system through the skin, a *specific* time elapses, in every instance, between the inoculation and the formation of the constitutional disease*, whilst the interval after the bite of a rabid animal, and the commencement of Hydrophobia, scarcely agrees in any two cases, we cannot surely refer the operation of the rabid virus to the same laws that regulate the production of disease by the inoculation of other morbid poisons. Are we then to suppose, that the virus lies dormant during the whole of the interval, until a very short time previous to the appearance of the hydrophobic symptoms, and is then absorb-

* Lusitanus (de Prax. Admir. Lib. iii. Obs. 87), relates a case of Hydrophobia occurring in two children, four years after they were bitten by a rabid cat. Lusitanus (ibid.) and Schenkius (de Ven. ex Animal. Lib. VII. Obs. 9), [illegible] of the disease having been caused by the wound of a [illegible] which a mad dog had been killed years before! [illegible] (Lib. VII. C. 2.) mentions a fatal case occurring [illegible] the bite; and, what is remarkable, the part then inf[illegible] ley (Manchester Memoirs, Vol. IV.) one after [illegible] cases are recorded, in which the interval was f[illegible] six months. In the case detailed by Dr. Mar[illegible] of these Transactions, the period was two months [illegible] sary to enumerate more cases: but, if the recorded [illegible] correct, the range is from three [illegible]

ed? Many authors, among whom are Dr. Darwin* and Dr. Percival†, have doubted whether the virus be absorbed; and certainly, with a few exceptions, the recorded cases do not state that the lymphatics or their glands were affected. In an interesting case, which fell under the care of Dr. Brandreth, of Liverpool‡, although the cutaneous nerves upon the inner side of the arm were inflamed, yet neither the absorbent gland at the inner side of the elbow, nor the axillary glands, nor the absorbents leading to them, were altered in any respect. Indeed, the whole lymphatic, arterial, venous, and glandular systems, were apparently free from disease, and the nerves only affected. The branches of the cutaneous nerves upon the inner side of the arm, leading up from the cicatrix, have, in several instances, been found in a state of inflammation§; a fact which, were it always observed, would readily explain why the disease has uniformly commenced with pain in the bitten limb or part. Dr. Percival, in maintaining that no absorption takes place, inquires whether all the symptoms induced are not of the nervous and spasmodic class? Or do any marks appear in the human kind, of a specific vitiation of fluids‖? It is difficult not to accord with remarks, especially when we reflect that, as

nia, Sect. xxii. 33.
ed. Journ. 1789, p. 299.
& Surg. Journ. Vol. XXIII. p. 235.
reith, Diss. de hactenus Prætervisa Nervorum
ibus Hydrophoborum. Tub. 1802, p. 13.
l, Vol. XXIII. p. 235.
p. 299.

far at least as refers to the hydrophobic symptoms of the disease, the dread of fluids, and the convulsions attending deglutition, not only occur in sympathetic Hydrophobia, where no virus has been absorbed, but sometimes even in Tetanus. Thus in a case of Tetanus, detailed by Dr. Currie, of Liverpool, the sight of fluid "produced evident distress; and if it was advanced towards the mouth of the patient, it never failed to bring on convulsions."* Similar instances of hydrophobic symptoms in Tetanus are recorded by Dr. Darwin†, Dr. Rush‡, and by several other writers.

But it may be demanded, by those who maintain that the virus is absorbed, why the effectual excision of the part, immediately after it has been bitten, is almost a security against the disease; whilst, if this operation be delayed for twenty-four hours, as in the case under consideration, it cannot be depended upon as affording the same security? There is, certainly, some difficulty in replying to this question; but, if it cannot be answered, it may be met by another interrogation. Where, I demand, if absorption take place so soon, does the absorbed virus lie dormant in the system sometimes for years? It cannot enter the circulation and remain in it; nor is it likely to lie [illegible] in the glandular system. It should also be remembered, that cases have occurred in which [illegible]

* London Med. Jou[illegible]

‡ Rush's Essay on Hy[illegible]

not appeared, although the bitten part was not excised until twenty-four hours after the wound was inflicted; and, in one case, Professor Autenreith amputated a limb five days after the bite, and the disease did not supervene*. The subject is, indeed, one of great obscurity; and in the present state of our knowledge, any solution of the question that might be attempted must be regarded as purely hypothetical; under the conviction of which I would hazard the following conjecture: that the virus remains dormant in the part where it is deposited by the tooth of the rabid animal, until a certain state of habit renders the nerves in its vicinity susceptible of its influence; and this being communicated, a morbid action is begun in these nerves, and extended to the respiratory nerves, which induce the whole train of symptoms constituting the disease.

If the foregoing hypothesis be proved consonant with fact, it would not alter the prophylactic means which are, justly, considered as those only on which we ought to depend,—the complete excision of the bitten parts as soon after the accident as possible; for, although no absorption take place, yet, the vi- may spread through the cellular and the mus- matter in the vicinity of the bitten part by of this operation; and some of it being o its extending beyond the boundary part, may produce the disease. In

Prætervisa Nervorum Illustratione Tab. 1802.

performing this operation, the use of the cupping-glass, as lately revived by Dr. Barry, should not be neglected; and, as the best glass for this purpose is that which is exhausted by the syringe, I would suggest the propriety of introducing a piece of moist sponge into the glass, moveable by a wire, passed through a collar of leathers, which would enable the virus to be detached from the wound, if the power of the exhausting glass be sufficient to bring it to the surface. The advantage of employing the cupping-glass, before excising the lacerated part, is indeed so obvious, that we cannot but wonder that it ever fell into disuse. It is recommended by Celsus, "Utique autem, si rabiosus canis fuit, cucurbitulâ virus ejus extrahendum est"*; and by several other ancient authors. Boerhaave advises a large cupping-glass to be applied to the bitten part†: scarification of the part, and the application of cupping-glasses, are mentioned by Turner‡, as commended by the best practitioners of his day; and Dr. John Hunter, in an Essay, which contains both the opinions and the practice of the period of its publication, remarks,—"Judging from the analogy of some other poisons, the greater quantity that is conveyed [illegible] blood, the more violent will the effects [illegible] be, might arise from lessening [illegible] deep and numerous [illegible] the wound [illegible]

* De Medic[illegible]

‡ Treatise on [illegible]

edly."* Dr. Percival, also, in speaking of washing out the virus from the wound, remarks, that it is at this time that the cupping-glass is useful, and it should be repeatedly applied.

Several other prophylactic measures have been strongly recommended, particularly the use of Mercury; and from the success which appears to have attended its employment by continental practitioners, and in India, by Mr. D. Johnson†, it certainly ought to be used when the smallest chance exists that the whole of the bitten part may not have been excised. Turner judiciously recommends the keeping open several blisters, applied to the arms, the thighs, and the legs. From a report of M. Marochetti, of Moscow‡, it appears that great success has followed the Russian practice of opening the pustules, which are said to appear under the tongue, in those bitten by rabid animals, and then cauterizing the parts; and one extraordinary case is detailed by Dr. Rossi§, in which the disease, after it had appeared, was checked by this operation. But, notwithstanding these authorities, I confess that my confidence in the practice is by no means considerable.

The diversity of symptoms which the disease ex-

* Trans. of a Society for the Improvement of Med. & Surg. ...owledge, 1793. p. 323.

... Chirurg. Journ. No. 4.

... Journ. of Med. & Surg. Vol. XIX. p. 152.

... Universali, June, 1825.

hibits, has been commented upon by Morgagni *; but, nevertheless, some symptoms are universal, and if the pathology of these can be explained, and they can be traced to their sources, one step at least will be gained towards a rational method of treating the disease. In endeavouring to clear up the obscurity in which these symptoms are involved, I am sensible that I may fail, and that the attempt may be regarded as presumptuous; but, even in its failure, it may suggest a method of investigation, which shall prove successful in the hands of another.

One of the most universal symptoms of the disease is the sense of suffocation, which accompanies the dread of water, and the difficulty of swallowing liquids. I have no hesitation in referring the first symptom, the sense of suffocation, as well as the difficulty of swallowing liquids, to a morbid change in the pons Varolii, the medulla oblongata, and the medulla spinalis, communicated to those nerves which originate in these parts, and which have been justly denominated, from their functions, the respiratory nerves. These are the fourth pair, the fifth, the portio dura of the seventh, the glosso pharyngeal, the spinal accessory, the par vagum, the phrenic, and the intercostal nerves. To [illegible] quainted with the muscles and the [illegible] which these nerves supply, and [illegible] in the functions of respiration, [illegible]

* Epist. [illegible]

Mr. C. Bell, it is unnecessary to explain the effect which any morbid state of the nerves that supply them must produce. Thus the gorged state of the lungs, displayed by the dissection of the case under consideration, which is an universal appearance, noticed in every recorded dissection of individuals who have died of Hydrophobia, is not to be attributed to any state of the larynx, but to an alteration in the whole of the parts concerned in the function of respiration, by which the blood, not undergoing the necessary change required for the purposes of the economy, the functions of the brain suffer, the nervous energy is exhausted, and the powers of life are destroyed. With regard to the convulsions, which are at first merely sobbings, these may, justly, be referred to the same set of nerves; and were the appearances of the spinal cord, as observed in this case, always detected, it would be easy to account for these by the fact, first, I believe, noticed by Portal, that slight pressure on the spinal marrow causes convulsions; greater pressure, paralysis. M. Lallemand, also, maintains that simple affections of the arachnoid produce spasm and convulsions, but that these are not followed by paralysis. In many of the recorded cases, also, of diseases in which the spinal marrow was found to be affected, the convulsions attending very closely resemble those in Hydrophobia.

lamented that, in the numerous dis-
hobic patients, the spinal marrow
amined. I am aware that

in some of the cases in which it has been inspected, no obvious change was observable; but in the majority of instances, the appearances have resembled those detailed in this paper. I will notice a few only of them. In the dissection of the case already alluded to, which was treated by Dr. Brandreth, the par vagum was covered with a blush of inflammation, its sheath injected with blood-vessels, and small ramifications of vessels, running parallel to the fibres in the cellular structure which connects the fibres.—The 4th, 5th, 6th, and 7th cervical nerves were also highly vascular, both in the sheath and between the fibres*.—Some of them were so much altered as to resemble muscular fibres, being scarlet externally, and pink internally. In the same case, and also in another detailed by Dr. Brandreth, in which the state of the spinal cord was not examined, a fluid escaped from the vertebral case. In a dissection, detailed in the Medico-Chirurgical Journal, for October, 1817, the pons Varolii, medulla oblongata, and upper part of the spinal marrow, exhibited evident marks of inflammation. In Laennec's cases, the spinal arachnoid was found a little injected, and contained serum. Orfila also mentions the inflamed state of the spinal cord; and in a dissection described by Mr. Copeland, the inflammatory appearances, which were obvious in the vessels of the brain, were observed chiefly on its base, on the crura

* Edin. Me[illegible] [illegible]ol. XXIII. p. 235.

cerebri and the tuberculum annulare*. In the dissection of Mr. Drake, who died from the bite of a rattle-snake, at Rouen, the only morbid appearance was redness of the theca of the spinal marrow; a fact which demonstrates the susceptibility of that organ to impressions of morbid poisons, introduced by the bites of venomous animals. It is impossible to say, whether these appearances were not the consequence of the existence of the diseased symptoms rather than their cause; but when we find that all the symptoms are, more or less, connected with the organs supplied by nerves arising from these parts, the probability is, that by whatever medium the poison may primarily excite diseased action, and an alteration of function in the medulla oblongata and in the spinal cord, the change of condition in these portions of the nervous system is the immediate cause of the sense of suffocation, and of the convulsions induced by swallowing liquids and by the blowing of cold air on the surface of the body.

With regard to the dread of water in this terrible disease, I am disposed to regard it altogether as a mental affection, connected with the sensation of suffocation, and the difficulty of deglutition experienced in drinking. I am induced to adopt this opinion, from what I remarked in the case which forms the subject of this paper. The intermission of the hydrophobic symptoms did not immediately

* London Medical Repository, Vol. III. p. 306.

take place, when the power of swallowing liquids with facility returned, but soon followed it, when the uneasiness which it had induced ceased to be intensely regarded. A curious fact, mentioned by Mr. Attenburrow, may be here noticed, illustrative of this opinion. In a case under his care, the patient was enabled to swallow fluids easily and without reluctance, when pressure was made in the smaller lobes of the ears*. I would explain this by saying, that the attention being diverted from those muscles, in which the convulsive action is excited in the efforts to swallow, to the parts compressed, the natural habits of the muscles of deglutition were enabled to overcome the diseased impression, and consequently less difficulty was opposed to the passage of the fluid into the œsophagus.

In remarking upon the treatment of this disease, it would be merely travelling over a record of unsuccessful attempts, were I to notice here the various means that have been hitherto employed to combat the fatal result, which has terminated every genuine case of the malady. Even blood-letting, a practice of so early a date as the period of Niger and Eudemius, who bled their patients and gave Hellebore, has not stood the test of experience, although it was revived, with the most promising prospect of proving successful, by Dr. Shoolbred

* Edin. Med. & Surg. Journ. Vol. V. p. 277.

and others. It has been maintained, that the want of success may be, in part, attributed to the abstraction of blood not having been carried to its utmost extent; but in a case which was treated by Mr. George Ballingall, at Trichinopoly, and in five other cases which came within his knowledge, the patients were bled ad deliquium animi, without any benefit*. Dr. Albers, of Bremen, also, has recorded a case, in which blood-letting, carried to its utmost extent, was unavailing†; and in a well-known case, treated by Dr. Rutherford, of Edinburgh, sixty-six ounces of blood were abstracted; but, nevertheless, the patient fell a victim to the disease. Some benefit appears to be promised from the employment of emetics. In a case, treated by Dr. Satterly, during the operation of emetics, whilst the inverted action of the stomach continued, the symptoms abated in violence, and increased when it was suppressed‡; but subsequent experience has not yet confirmed the expectations founded upon that case.

In the instance now before the Society, from the evident relief which followed the administration of the Prussic acid, it might be supposed that I would strongly urge its employment in future cases of the disease; and I am disposed to do so, regarding it as a powerful auxiliary for the abatement of the

* Edin. Med. & Surg. Journ. Vol. II. p. 74.

† Ibid. p. 413.

‡ Trans. of the College of Physicians of London, Vol. IV.

convulsive action which is so distressing; but I am far from considering it in the light of a specific in Hydrophobia, or as a remedy at all likely to do more than it effected in Lange's case. If my notion of the pathology of the disease be admissible, the plan of treatment which it suggests, when the disease is fairly present, is directed, in the first place, to diminish excitement in the medulla oblongata and spinal cord; to remove every source of irritation, both external and internal; and, in the second place, as soon as an intermission is effected, to promote the tone of the system as rapidly as it can be accomplished. With these objects in view, I would propose to cup the patient repeatedly, along the whole course of the spine, and to follow this with blisters on the same part*; to exhibit large doses, say twelve and fifteen grains of Calomel, combined with Tartar-emetic, whilst the strength remains unimpaired; both with the view of clearing the primæ viæ, and of obtaining the sedative effect which Calomel in such doses produces. I would then recommend the administration of Prussic acid, in full doses; for independent of the benefit, at least to the comfort of the patient, which I witnessed from the use of this powerful sedative, I am induced to look for more permanent advantage from it, by knowing the success which attended

* In a case of hysteria, accompanied with horror of fluids, which occurred in a lady, much benefit was derived from the application of the actual cautery to the nape of the neck. Vide Omodei-Annali Universali de Medicina. Jan. and Feb. 1826.

its employment by Professor Brera, in Rachialgitis. In Lange's case, Ammonia seemed to increase the violence of the symptoms, which may be explained if we reflect that Ammonia rouses the sensibility of the nervous system, which in hydrophobia is already too great. With respect to the tonics to be administered for answering the last indication proposed, the Sulphate of Quinina, from its power and the small compass in which it can be given, is likely to answer better than any of the bitters or the Cinchona in substance. It might be alternated with the Nitrate of Silver, which experience has proved to be a most powerful antispasmodic, as well as a tonic in chorea.

The excessive sensibility of the surface, throughout the disease, points out the necessity of keeping the temperature of the apartment of the patient rather higher than might otherwise be considered requisite.

3, Hinde Street, Manchester Square,
28th November, 1826.

AN

EXTRAORDINARY CASE

OF

OVARIAN DROPSY;

COMMUNICATED BY

CHARLES THOMAS, M.D.

PHYSICIAN TO THE DEVONPORT PUBLIC DISPENSARY.

Read November 28, 1826.

THE venerable Heberden remarks, "ovaria sæpe fiunt sedes hydropis in fœminis, et morbus in illis perseveravit plus decennium, cum haud majori incommodo, quam quod ex mole tanta, tantoque pondere necessario natum est."

Such was the case of Ann Payne, the circumstances of which are now to be related.

July 5, 1825.—She is about fifty-two years of age, married early in life, has had many children, and menstruated several years after the disease was formed. About twelve years ago, when her

youngest child was less than a year old, a swelling in the left iliac region was noticed. It went on increasing, and remained distinct and moveable for some years; but afterwards became fixed and uniform, and occupied the whole abdomen.

She measures round the most prominent part fifty-four inches. The distance from the extremity of the ensiform cartilage to the pubis is twenty-six inches. Her mind is cheerful; appetite and sleep good; legs are beginning to be œdematous; but it is only of the bulk of the tumour that she makes any complaint.

The linea alba was punctured, and about seven quarts of serum were drawn off. The flow suddenly stopped, and the operator perceived with the end of the canula a resisting body, which could have been no other than the unopened ovary.

August 5.—She has gone on in the same state of general health as before. Her bulk was lessened about three inches immediately after the operation; but now she has nearly regained it.

August 9.—She is of her former size. A puncture was made on the left side, midway between the umbilicus and superior spinous process of the ileum, the exact site of the tumour when first it appeared. The trocar easily punctured the sac, and twenty-two quarts of fluid, resembling thin

coffee-grounds, were evacuated; and afterwards five quarts of clear serum from the abdominal cavity. She bore the operation without faintness, or any other unpleasant effect.

Sept. 15.—Five weeks and two days after the last operation she was again tapped. At its greatest prominence the abdomen measured only three inches less than before the former operations; but the upper part of the cavity was not so much distended. Her health is better than it ever has been since I first visited her. Two and twenty quarts of a brownish fluid were evacuated. This, there is every reason to believe, all came from the ovarian cavity, and is precisely the same quantity it afforded the last time.

November 3.—Tapped again. She measured round forty-nine inches, which is five less than before the last operation. The quantity of fluid, twenty quarts, nearly corresponds with that evacuated at former periods.

January 6, 1826.—About eight quarts of fluid drawn off. As it seemed probable that there is a distinct sac in the left iliac region, containing this quantity, and no more, it has been determined to perform the operation the next time in the linea alba, as was done at first.

March 28.—A puncture was made in the linea

alba; but nothing was effused except about two ounces of a fluid, resembling the white of an egg, slightly tinged with blood.

March 31.—She was tapped at the usual place on the left side, and nearly the same quantity was evacuated as on the 6th of January. At first it flowed freely in a full stream, but suddenly stopped. Her size, previously to this operation, was as large as ever, and this partial discharge lessened it but little.

On every former occasion she suffered no uneasiness after the operation. The same was the case now, and so she continued when I visited her on the 1st, 2d, and 3d of April. On Wednesday the 5th, in the evening, I was requested to see her. I found that she had not slept duri ng thepreceding night. She had been suffering pain for more than twenty-four hours, which she described as shooting from one part to another, in acute paroxysms of a few minutes' duration. I found also, upon making a good deal of pressure, some uneasiness all over it. She had felt no chills. The countenance was sunk, and expressive of great distress. The pulse at 120, with a slightly sharp beat.

About ten ounces of blood were abstracted from the arm, and small doses of sulphate of magnesia in peppermint water prescribed.

Thursday, April 6.—No sleep during the night,

and she had been able to take very little of the medicine. Stomach irritable, but the pain not near so severe as last evening. The blood exhibited an abundant separation of fibrine. Six ounces more abstracted, and every endeavour made to open the bowels by repeated glysters.

Friday, April 7.—Pain now very inconsiderable; but the pulse is small and frequent, irritability of the stomach incessant, and the cast and character of the countenance indicative of approaching dissolution. No discharge from the bowels. Effervescent draughts to be given frequently, and a grain of opium now, nine a. m., and to be repeated at noon, if necessary.

Seven, p. m.—No alteration in the state of the stomach and bowels, and she appears rapidly sinking. Iteretur op. gr. j.

Saturday, April 8.—At ten o'clock in the forenoon she expired.

Sunday, April 9.—At seven o'clock in the morning the body was examined.

The integuments were divided from the ensiform cartilage to the pubes, and from the superior spinous process of one os ileum to the other. There was not such a diminution of fat as might have been expected, but the abdominal muscles

were almost entirely absorbed. The fasciculi of fibres were attenuated, and separated from each other, but retained a florid healthy aspect. The transverse lines were scarcely discernible. The peritoneum was become very opaque, of a somewhat cartilaginous texture, and about a quarter of an inch in thickness.

When the abdominal cavity was fully exposed, nothing could be seen but one immense uniform tumour, occupying the whole of it, except an interstice of about an inch, extending round in every direction. From this space two quarts of fluid were pressed out.

The tumour was moveable, and a puncture being made in the most depending part, about as much fluid, and of the same character as when she was tapped on the 9th of August, was drained off. Its sides were generally half an inch in thickness, but in some parts full an inch; and possessing the same cartilaginous character as the peritoneum. At its greater diameter it measured forty-two inches round; at the less thirty-eight.

As the whole history of the case had plainly indicated, it was the left ovary which had acquired this enormous bulk. It was fixed to the lateral ligament of the uterus by a pedicle of peculiar firmness, and about an inch in diameter. It had no other attachment whatever. The uterus and

right ovary were in no respect different from their usual state in healthy women of her age.

The whole of the intestines were detruded from their natural position by the progressive growth of the tumour, and lodged close to the right side of the spine. All the abdominal, and the other pelvic viscera were sound.

The chest and head were not examined; but as all the important functions connected with them went on without the least interruption to the last, there can be no reason for concluding that any morbid appearances would have been detected in either of these cavities. The only recent marks indeed of this sort found in any part, were a few slightly livid patches on the exterior surface of the tumour. A large mass of hydatids occupied the lower part of its cavity; and the trocar not passing fairly through it, accounts for the want of success in tapping at the linea alba on the 28th of March.

From the circumstances thus detailed, it becomes quite evident, that the exciting cause of the phenomena which led to this poor woman's death, was the distention of the ovary for a longer period than before. The fluid drawn off on the 31st of March, though amounting to six or seven quarts, could only have been from the abdominal cavity. When I saw her on the 5th and 6th of April, I would willingly have had the sac punctured, but

was deterred by the expectation of its having become inflamed, or that she might die under the operation; but I am rather inclined to think, that the attempt might have been justifiable.

Could we have gone on to empty the sac without interruption, it may fairly be inferred, that from the sound state of all the important organs, she might have lived for many years.

Several times after it had been entirely emptied, the diseased ovary could be felt, loose, and unattached in the abdomen, just as it was found to be at the post-obit examination. The advocates for the extirpation of such ovaries may be inclined to view this circumstance as affording some sort of sanction for that practice.

A very remarkable case of ovarian dropsy is described in the third volume of the Society's Transactions, by the late Mr. Chevalier. The quantity of fluid there, as he remarks, probably exceeds that of any other case on record. In Ann Payne it was also enormous, and would have been still more so, had not a considerable portion of the sac, at its lower extremity, been filled by the large cluster of hydatids before noticed.

CALCULATIONS

RESPECTING

THE PERIOD OF PARTURITION

IN WOMEN;

BY

SAMUEL MERRIMAN, M.D. F.L.S.

FELLOW OF THE MEDICAL AND CHIRURGICAL SOCIETY OF LONDON, AND CORRESPONDING MEMBER OF THE IMPERIAL AND ROYAL ACADEMY OF SCIENCES AT SIENA.

Read May 22, 1827.

THE question respecting the utmost period to which utero-gestation in the human species can be prolonged, has been often agitated, but never satisfactorily decided. Recent circumstances have again called this question into discussion, and several medical practitioners, supposed to be very conversant with such inquiries, were examined before the highest judicial tribunal in this country, for the purpose, if possible, of determining this point; but their conflicting testimonies have tended rather to obscure than to elucidate the matter.

Indeed such a contrariety of opinions exists, upon almost every circumstance connected with

the functions of the uterine system, and there is so much difficulty in obtaining from females precise information upon such subjects, that it is little wonderful if the investigator find himself, at every step, involved in intricacy and confusion.

Before it is possible to determine the utmost duration of pregnancy, it becomes necessary to ascertain the point of time from which its commencement is to be calculated; but this remains quite unsettled, for some persons date from the time at which the monthly period intermits, others begin to calculate from a fortnight after the intermission: some reckon from the day on which the succeeding appearance ought to have become manifest; some are inclined to include in their calculation the entire last period of being regular, and others only date from the day on which they were first sensible of the motions of the infant.

It is highly probable that more accurate observation would clear away much of the uncertainty in which this question remains; and it may be hoped that those, whose opportunities afford them the means, will not neglect to note down such facts as may assist in effecting this desirable purpose.

With the view of somewhat elucidating this subject, I take the liberty of laying before the Society a Table, for the accuracy of which I can fully vouch, and which was thus constructed. When I

have been requested to calculate the time at which the accession of labour might be expected, I have been very exact in ascertaining the last day on which any appearance of the catamenia was distinguishable, and have reckoned forty weeks from this day, assuming that the *two hundred and eightieth* was to be considered as the legitimate day of parturition. The subjoined Table shews how often this day was deviated from, and what was the actual number of days from the day of menstrual intermission to the birth of the child.

A TABLE

Of the Births of 114 mature children, calculated from, but not including the day on which the catamenia were last distinguishable.

At 255 days	.....	1
256	.....	1
259	.....	1
		3 in the 37th week.
At 262 days	.....	2
263	.....	2
264	.....	4
265	.....	1
266	.....	4
		13 in the 38th week.

At	267 days.....	1
	268	1
	269	4
	270	1
	271	2
	272	2
	273	3
		14 in the 39th week.
At	274 days.....	4
	275	2
	276	4
	277	8
	278	3
	279	3
	280	9
		33 in the 40th week.
At	281 days.....	5
	282	2
	283	6
	284	1
	285	4
	286	3
	287	1
		22 in the 41st week.

At 288 days..... 5
289 2
290 2
292 4
293 2

15 in the 42d week.

At 295 days..... 1
296 2
297 2
298 4
301 1

10 in the 43d week.

At 303 days..... 1
305 1
306 2

4 in the 44th week.

From this Table it seems fair to infer, that conception is effected soon after the catamenial period has intermitted more commonly than immediately before the recurrence of that discharge, contrary to the opinion of a physician, who has directed considerable attention to this subject; and who says, " It is *more* probable that conception takes place a short time previous to the next expected

menstruation; an opinion which we know many physiologists entertain."* I may add, that though I have restricted the Table to 114 cases, because those are the only ones which I have been able completely to verify; yet I have calculated a great many more in the same manner, and with results so nearly similar, that I have no doubt of the general correctness of the principle.

A knowledge of this fact is likely to be useful on many occasions, but is of paramount importance in enabling the accoucheur to fix upon the proper time for inducing premature labour, in those afflicting cases of deformed pelvis which allow of no other hope of preserving the child.

Upon a few occasions the period of delivery, dated from the last appearance of the catamenia, has exceeded forty-four weeks, or three hundred and eight days, and I subjoin a short detail of these anomalous cases.

1. Mrs. I. had in ten pregnancies borne eleven children; she had on all these occasions become pregnant almost immediately after the monthly intermission. She was regular in March, 1813, and had no appearance after the 7th inst. She was led to believe that she conceived on the 8th, and made

* Dr. Lyall, "Evidence in the Gardner Peerage Cause," p. 60.

preparations for her confinement in the early part of the following December. Her labour did not take place till the 11th of January, 1814, making 309 days, not including the day of supposed conception, since the disappearance of the catamenia.

The child, a boy, when born, was larger than most, if not than any of her former children, and her labour was of several hours' longer duration. She was once pregnant afterwards, but this pregnancy presented nothing unusual.

I have always been inclined to think, that in this case gestation was protracted beyond the usual term of forty weeks. The lady was a woman of great modesty and good sense, and free from every sort of affectation. She could have had no motive for fixing upon the 8th of March, as the time of conception, but a firm conviction that she was right in her calculation; and neither the time of quickening, nor any other circumstance, induced her to suspect that she had formed an erroneous opinion.

It has indeed been assumed* respecting this case, that the lady did not conceive on the 8th of March, but much later in the interval of freedom from menstruation; namely, only just before the next recurrence of the period. Ought this assump-

* Evidence in the Gardner Peerage.

tion to be admitted as decisive against the opinion of the lady herself? She had formed her opinion after the experience of ten pregnancies, in all of which, she calculated from the same premises, and her reckoning had proved correct; and in a subsequent pregnancy, calculating in the same way, she again formed a correct opinion. The assumption rests altogether upon the hypothesis, that in this one particular the usual course of nature cannot be deviated from, though we have evidence *ad infinitum*, that the course of nature in every other point relative to conception, gestation, and parturition, is continually interrupted and deranged. But let us grant what is assumed, that the conception did not take place till "the day preceding the next menstruation," will this clear up the difficulty? The catamenia had ceased on the 7th of March: according to the laws of nature, as contended for by those who make this assumption, the catamenia, unless arrested by conception, ought to have returned at the end of twenty-eight days, consequently on the 4th of April, but they did not return on that day; and therefore, according to this hypothesis, the conception must have been complete on the 3d of April, which gives to the 11th of January following 283 days; and demonstrates, that the longest period of pregnancy which the objectors allow to be possible, was exceeded by three days.

2. Mrs. N. had lain in of one child, and the number of days which elapsed on that occasion,

between the catamenial intermission and the labour, was 303. Mrs. N. was unwell in November, 1822; she recovered on the 15th, and had not the slightest appearance afterwards. Her labour took place on the 5th of October, 323 days from the day of intermission.

It should be remarked, that Mrs. N. is of a very nervous temperament, and has always been irregular in her periods of menstruation. The child was large, but not larger than might be expected from a mother, who is herself above the usual size of females. This case, therefore, though exhibiting so considerable a deviation from the usual course of pregnancy, cannot be adduced as satisfactory evidence of protracted gestation.

3. Mrs. B. upwards of 40 years of age, who had not borne a child for more than nine years, was unwell in March, 1823. As there was no appearance of the catamenia in April, nor the following months, she comforted herself with the hope that the critical change in her life had been happily effected. After some considerable time, however, she began to enlarge in size, and fearing that some disease was forming, she consulted the late Mr. Chevalier, who probably supposed that her complaint was ovarian.

The enlargement continuing to increase, she was recommended to procure the advice of an accou-

cheur, and in consequence applied to me. On hearing the history of the case, and being positively assured that there had been no appearance of the catamenia for more than twelve months, there was no reason to suspect pregnancy, and I concluded, therefore, that the enlargement was occasioned by an ovarian tumour. When, however, I had other opportunities of seeing Mrs. B. and was permitted to make an examination per vaginam, it became evident that pregnancy was considerably advanced, and in nine or ten weeks afterwards (viz. Sept. 27, 1824) she was delivered of a very stout healthy boy.

This is the only instance which has occurred within my knowledge, of impregnation being effected under such very unusual circumstances. It is not a common event for a woman, upwards of forty years of age, to have a child after an interval of nine years, even when she continues to have regular returns of her periods; but when the menstrual discharge has ceased for many months, in a woman at so late a period of life, it is a very extraordinary occurrence that pregnancy should take place, especially as there was no return of the catamenial secretion.

A CASE

OF

EXTRA-UTERINE GESTATION,

IN WHICH THE FŒTUS WAS EXTRACTED

THROUGH

AN APERTURE MADE IN THE POSTERIOR PART OF THE VAGINA, BETWEEN THE UTERUS AND RECTUM.

BY

G. NORMAN, Esq.

OF BATH.

Read March 27, 1827.

MRS. O. aged 41, of a corpulent habit and a sallow complexion, had been married twelve years. She had been subject to palpitation of the heart, and occasionally to quick breathing. She had never borne a child, but had miscarried about six years after her marriage, between, as was then supposed, the second and third month of her pregnancy.

October 14th, 1824.—About eight months ago she had become very ill, the palpitation had returned very frequently, and her respiration became so difficult that she was unable to lie in bed without being very much raised at the head. From about that time she had ceased to menstruate, and had frequent sickness and vomiting.

On examining the abdomen at rather more than three months from her last menstruation, a rounded tumour was felt in the left iliac region, apparently as large as the fist. She was then unable to lie on her right side, and all her distressing symptoms continued to increase.

About five months after her last menstruation she began to feel the motion of a child, which gradually became stronger, until at length there seemed to be no doubt of her being pregnant. Her breathing became still more difficult; she was unable to go up stairs, and frequently was obliged to sit up the whole night. Her pulse became quick, irregular, and sometimes, when labouring under a paroxysm of difficult breathing, scarcely perceptible. Small bleedings and diuretics had been employed with some temporary relief, but still the urgency of the symptoms had gradually increased, and when I first saw her, at the period of eight months from her last menstruation, she had been unable to go to bed for a week or ten days together, and never for more than two or three hours. Her legs were very much swollen and œdematous.

She had been then suddenly seized with symptoms indicative of a failure in the action of the heart, and her dissolution seemed to be almost inevitable. Relief was procured by administering large doses of opium, which restored the heart's action. During the paroxysm her respiration was

most imperfect, and her face and lips purple. No doubt being entertained of her pregnancy, and her distress being supposed to arise in a great measure from the distention of the uterus, it was proposed to rupture the membranes in order to bring on labour; but as the symptoms became somewhat less severe, and as she was again able to remain in bed for some hours during three or four nights, the attempt was postponed. No examination was then made by the vagina, but I was able to feel the child through the integuments of the abdomen, more readily than is usual. The tumour before mentioned on the left side could not then be felt.

On the forenoon of the 13th of October, she was again seized with a paroxysm of difficult respiration, and almost total suspension of the action of the heart. She was momentarily expected to expire, but a large dose of laudanum, and warmth applied to the chest and extremities, again restored the circulation, so that in about two hours the pulse had become firm, and the breathing much improved. She was then supposed to be in the ninth month of her pregnancy, and the attempt to bring on labour was determined upon: on examination per vaginam, however, with that intent, the os uteri could not be discerned. The form of the child's head was distinctly felt, covered by an intervening substance, apparently as thick as the parietes of the uterus. This substance could be readily traced to its termination in the vagina, at the posterior part,

but anteriorly under the pubes it could not, until on introducing my hand farther, I thought I was able to trace it all round, terminating in the vagina, though I could nowhere discover the os uteri, the vagina at the same time appearing shorter than natural. The substance covering the head of the child was considered to be an imperforate hymen, or at any rate a thick membrane, either natural or the product of disease, intervening between the vagina and the uterus.

The assistance of Mr. Day, an old and much-experienced practitioner in midwifery, was by my desire resorted to, in consequence of my having been called by him some time before to a case somewhat similar, inasmuch as in a first labour, after several hours of severe pains, the form of the head could be felt, though not the os uteri, a substance intervening which terminated in the vagina. A small aperture was made in the centre of this substance, and a probe-pointed bistoury having been introduced, an incision of two inches was made, behind which the os uteri was felt considerably dilated. The labour then proceeded, but was not finished without forceps. The patient however did well, and has since been confined again without difficulty.

In the present case it was agreed to proceed in the same way; and accordingly, after making an aperture, an incision of about two inches was carried

through the substance, but the os uteri could not be found. I thought I could feel the membranes covering the head, and on tearing them with the nail some fluid escaped, and the scalp of the child could be felt. The patient immediately expressed herself much relieved, which was attributed to the escape of the liquor amnii taking off the distention of the uterus. She remained easy all the afternoon, and said she was more comfortable than she had been for many weeks. She experienced some pains at intervals during the night.

On the following morning (the 14th) when I examined the vagina, the head was in the same situation as before, but the scalp was slightly corrugated. The os uteri could not be felt; it was supposed to be dilated beyond the margin of the artificial opening. The day passed with some return of pains, but without any alteration in the state of the parts. At ten in the evening she had a return of the difficulty of breathing, which required opium for its relief. On her recovering somewhat from the weakness and distress, it was agreed to open the head and extract the child, as the pains had not produced the slightest effect in propelling it, and as it was too far out of reach to admit the use of the forceps or vectis. Indeed, doubts were entertained of the possibility of opening the head, from the height of its situation, the narrowness of the passages, and the great difficulty of introducing the fingers, all much increased by

the patient's inability to lie down for more than a short time, and that with the greatest distress.

The opening already made with the probe-pointed bistoury, was enlarged in the same way for two inches more, but still the os uteri could not be felt. The head was opened, and the brain extracted. With the aid of a pair of straight forceps and the blunt hook, the child was extracted with less difficulty than had been anticipated. The patient too bore the fatigue of the operation beyond our expectation. When the head was extracted a fold of the funis came down, and was unfortunately broken in the subsequent delivery of the child. No effort towards the expulsion of the placenta occurring, an examination was made, but no trace either of the funis or of the placenta could be discovered, nor any contraction of the uterus; but a hard solid tumour was found on the left side of the patient. Repeated examinations afforded no information as to the situation of the placenta, though after some time a loose substance was felt high up, which for a moment gave somewhat the feeling of a part of it. It could not be traced however to any attachment to the sides of the uterus, and further examination convinced me that it was a fold of intestine.

We now agreed, as the patient was much exhausted, and as our efforts to discover the placenta had proved ineffectual, to relinquish the attempt,

particularly as there was something so uncommon in the case, and so much doubt as to its nature.

Upon consideration we were then of opinion, that it had been a case of extra-uterine gestation; that the aperture through which the child had been extracted, had been made through the vagina and the peritoneum; and that the child not being in the uterus, explained why it had never been propelled, nor the placenta thrown off by uterine contraction.

The patient's strength soon became recruited, and she could lie down with ease. She took nourishment, and had some sleep in the night.

In the morning (15th) she felt comparatively comfortable, her pulse was 112 and firm, her breathing easy, and her spirits good. She continued to take nourishment throughout the day. In the evening she expressed herself as being quite as well; but the coldness of the skin and the weakness of the pulse too plainly indicated the failure of vital power. In the night she became very restless, and complained of pain over the whole of the abdomen.

On the following morning she had a frequent regurgitation of fluid from the stomach, without any effort of vomiting. There had been no discharge from the bowels, though small doses of

castor oil, and subsequently divided doses of aloes with opium had been given.

During the day and night the pain in the abdomen became more intense, and the rejection of fluid from the stomach constant. The pulse sunk, soon became imperceptible, and on the 16th at two p. m. she died.

An examination of the body was made the next morning. On opening the abdomen the whole of the small intestine appeared to have been much inflamed; one convolution lay low in the pelvis, and seemed to be that which had for a moment been taken for a part of the placenta. The whole of the peritoneum bore marks of inflammation, but there were not any adhesions. The placenta was found attached to the right ligamentum latum, from which it was easily separated. The funis was torn away about two inches from the placenta, into which its vessels entered separately.

The part divided in the operation previous to delivery was the posterior part of the vagina, which, together with the peritoneum, had been divided to the extent of four inches. The os uteri was situated above the pubes, as in retroversio uteri. The anterior part of the vagina was so compressed under the pubes that the finger could not be passed, nor the os uteri felt from the vagina.

The tumour which had been felt on the left side when searching for the placenta, and most probably that which lay in the left iliac region at the third month of pregnancy, was the uterus, with its body and fundus very much enlarged, owing to the existence of some soft tubercles, one as large as a pigeon's egg, imbedded in its substance. The uterus itself was also thickened and hard, but not scirrhous. Its cavity was lined by a very well defined tunica decidua.

The heart was flaccid, the ventricles thin, and containing no blood: the pleura and lungs presented no morbid appearances.

Had the placenta been fortunately found with ease after the delivery of the child, and had there not been any disease of the uterus, there would not appear to have been any very great improbability of the recovery of the patient; and in some future case of extra-uterine fœtus, when the head may be in a similar position, the operation may perhaps lead to a more fortunate result.

HISTORY

OF

TWO CASES

OF

LACERATION OF THE UTERUS

DURING LABOUR,

AFTER WHICH

ONE OF THE WOMEN SURVIVED NEARLY EIGHT WEEKS, AND THE OTHER PERFECTLY RECOVERED;

WITH SOME GENERAL REMARKS,

BY

WILLIAM BIRCH, Esq.

MEMBER OF THE ROYAL COLLEGE OF SURGEONS, AND LECTURER ON MIDWIFERY AT ST. BARTHOLOMEW'S HOSPITAL.

Read June 5, 1827.

TWO Cases of lacerated uterus having lately fallen under my observation, which are at least curious in their events, the one woman having lived nearly eight weeks, and the other having recovered, I have deemed it proper to present them to the notice of the Medical and Chirurgical Society; and at the same time to lay before it, the conclusions which have forced themselves on my mind from a consideration of the subject generally. I do not present these cases as unique, nor my opinions as

novel, but I have been induced to bring them forward to remind medical men, that laceration of the uterus is not of necessity fatal, and to strengthen the opinion I hope now generally prevalent, that women suffering under this accident ought not to be abandoned to the efforts of nature.

Of the first woman I saw nothing until after her death, but have been favoured with the following history of her case, by Dr. Conquest and Mr. Hill, of Pentonville, under whose care she was placed.

CASE I.

Mrs. Wa——ns, Wellington Street, St. Luke's, aged 25, has had two children, both still born; the first was delivered with the forceps, the last with the crotchet. Mr. Hill was called to her at six p. m. on the 21st of February last. She had then slight labour pains. At eleven he again visited her, and found the os uteri about the size of half a crown, and the head presenting. The pains became stronger. At three the following morning the membranes gave way, and at five the head had begun to descend into the upper aperture of the pelvis; the pains still continuing strong. At nine she suddenly complained of distention of the abdomen, with a sense of suffocation so distressing, that she required her trunk to be raised almost to an erect posture. Her pulse became much quicker; from 80 it rose to 140; her countenance was pale

and anxious; there was some bleeding from the vagina; the uterine pains diminished gradually, and soon completely ceased, but the head of the child did not retreat. She did not complain of any unusual pain when the sense of suffocation, &c. came on, nor at any other period.

Dr. Conquest was called in between nine and ten o'clock, and finding the woman in the above mentioned state, he delivered her with the perforator and craniotomy forceps.

Her delivery was followed by inflammation of the abdomen, which was treated in the ordinary way. She gradually sunk, and died April the 7th.

These gentlemen were kind enough to allow me to be present at the post-mortem examination. On opening the cavity of the abdomen, the intestines were found glued together at various parts by elongated bands of recently effused lymph. The peritoneum lining the cavity of the pelvis, and the lower part of the cavity of the abdomen, was of a dark colour, exactly resembling the pigmentum nigrum, but it had lost none of its polish, nor was it in the least more tender than natural. This appearance I had never before seen, and it gave me the notion of a stain from the long contact of blood, or of some remaining particles of blood, which the absorbents had not yet had time to remove. However I am told by Mr. Stanley, such

an appearance of the peritoneum is every now and then met with as an effect of inflammation. The antero-posterior diameter of the pelvis was small, but I had not the means at hand of taking its exact dimensions. The whole of the pelvic viscera were removed; the uterus had regained its ordinary unimpregnated size; a longitudinal laceration was found implicating the posterior part of the cervix uteri, and the posterior parietes of the vagina, about one inch and a half long; each extremity of the laceration had healed to a slight extent; the edges of the wound, however, were without granulations, and the only attempt at cure which appeared to have been going on lately was the deposition of coagulable lymph, in the shape of a slight band, passing from the edge of the wound to the rectum. These facts are well represented in the accompanying drawing.

CASE II.

The subject of the second case is Mary Wren, residing at 50, Northampton Street, St. John's Street, Clerkenwell, a patient of the Finsbury Midwifery Institution. She is 29 years of age, and a woman of delicate frame; she has borne three children; the first two are now living; the last was still-born after a tedious labour.

On the evening of Monday, the 16th of April, I was summoned to the assistance of Mr. Thorne,

of 29, St. John Street, who was in attendance upon her. He gave me the following account of the progress of her labour. He had been called to her about seven o'clock in the morning, the membranes having given way on Sunday evening, but no pains having come on until about two or three hours before his attendance was requested. He found the pains good, the os uteri almost completely dilated, and the funis and a foot presenting; on pressing his examination further, he discovered the head and a hand at the upper aperture of the pelvis. He made an ineffectual attempt to carry up the funis, and its pulsation very soon ceased. His next effort was to bring down the foot, but neither could that be accomplished without more violence than he felt himself authorized to employ. The impression now made on his mind was, that there were twins, the one presenting the foot, the other the head and hand, and he determined to carry up the foot and hand, which he did about eleven o'clock, but not without considerable difficulty, the uterus contracting powerfully at the time. From this period the pains were strong, and followed each other in rapid succession, whilst the head was apparently making very slow progress into the upper aperture of the pelvis. Between two and three o'clock the woman experienced a most violent pain, which she subsequently told me she took for an unusually strong labour pain; she vomited almost immediately, and from this period complained of constant pain and soreness of the

abdomen, and of oppression at the præcordia. Her pulse became rapid, but never much depressed, and there was some bleeding from the vagina; the pains gradually abated in force and frequency, and soon after three o'clock they had entirely ceased.

When I arrived soon after six, p. m. I found her with a countenance of extreme anxiety; she was pale as death, her respiration was hurried and difficult, and her voice scarcely audible. Her pulse was under a hundred, and not remarkably weak. She complained of an oppressive fulness at the pit of her stomach, and of constant pain of the abdomen, with extreme tenderness, so that pressure, or any attempt to move in bed, gave her great torture; the pain was principally referred by her to the left iliac region. There were no labour pains. On examination per vaginam, I found a large portion of the funis lying in the canal. I felt the head at the upper aperture of the pelvis, but far from being wedged within it, it seemed on the point of receding before the pressure of my fingers. My hand when withdrawn was smeared with blood. I did not press an external examination from the pain it gave her.

From the symptoms now present, and from the history of the woman's labour, given me by Mr. Thorne, I arrived at the conviction that the uterus had given way, and I had no difficulty in making up my mind that she ought to be delivered imme-

diately. The child being dead, as evinced by the want of pulsation in the funis for many hours past, and more especially as the pelvis seemed to me under the average size, I determined to make an attempt to perforate the head, although I saw a probability of not succeeding, from the circumstance of its extreme mobility. Mr. Thorne undertook to make pressure on the abdomen, in hopes of fixing the head, and with this assistance I managed to perforate the cranium; but on attempting to expand the blades of the instrument, the head receded over the pubis. I immediately passed my hand per vaginam; it met with little or no resistance, and speedily came into contact with the child's head. I passed it along the side of the child, between it and the abdominal parietes, grasped one of its feet, and not readily finding the other, brought down the one I had hold of: the nates and trunk were not brought through the pelvis without considerable difficulty; but when the head came to the upper aperture, all my exertions to make it enter the pelvis were unavailing, and I was again obliged to perforate behind the ear; after which, with the assistance of the craniotomy forceps, I easily terminated the delivery. All this the woman bore with amazing fortitude, without giving utterance to a cry or a complaint.

Mr. Thorne almost immediately removed the placenta, which was separated, and lying in the vagina; there was no hæmorrhage; the woman ex-

pressed herself relieved from the sense of oppression at the pit of the stomach, and her pulse was not more hurried or depressed.

I subsequently passed my hand into the vagina, and it immediately came into contact with several coils of intestine, which I returned through the wound. My hand having followed them into the cavity of the abdomen, I felt the uterus contracted to the dimensions of a full-sized Florence flask, lying at the back of the abdomen, and encompassed by the intestines*.

The woman had a little retching; she complained of pain and tenderness of the abdomen, but on the whole she expressed herself relieved. I gave her a full dose of laudanum, and left directions she should be kept most perfectly quiet, and that the opiate should be repeated to the extent of keeping her free from pain.

Thus far I have entered minutely into the detail of the case, in order that every one may be satisfied I have not mistaken any other combination of circumstances for a rupture of the uterus.

On my visit to the woman the next morning, I found she had passed a tolerable night, having had

* Mr. Thorne made a similar examination, and his report in every respect agrees with my own.

some sleep; her pulse was quick, but steady; the abdomen was puffed up, but the tenderness was not increased; she had made water freely and copiously, and the lochia were natural. Her great complaint was of intolerable thirst, and of a sinking sensation, both of which were relieved by effervescing saline draughts and by an aperient clyster. On the second day, with the same train of symptoms, the tenderness of the abdomen had increased; leeches, fomentations, poultices, purgatives, and effervescing draughts, were put into requisition; and not to enter with tedious minuteness into the subsequent history of the case, the tenderness of the abdomen had entirely gone, at the end of a week, after a second application of leeches, frequent doses of calomel and opium, so as to affect the gums, and a most strictly antiphlogistic regimen. She continued to pass her urine freely, she had no secretion of milk, and the lochial discharge was now mixed with pus. She continued to mend slowly until about three weeks after her delivery, when the discharge from the vagina ceased, and she had, from some slight indulgence in her diet, a second, but slighter attack of abdominal inflammation, which speedily yielded to leeches, calomel, and opium; and at the present moment, seven weeks from the date of her labour, she is free from every complaint but slight debility: she is so far recovered as to occupy herself in her domestic affairs; and the last question she put to me was,

whether I thought she might with safety fall with child again*.

It may be questioned whether this was not a case of lacerated vagina, the uterus remaining entire, and I cannot state that my examination of the wound was so minute as to enable me to say positively, that I felt the uterus torn; such however was my conviction, and the circumstance of the bladder remaining uninjured, has raised this conviction into certainty; for I hold that this would have been impossible, had so free an opening been made in the anterior parietes of the vagina, the whole length of which is not only in contact with, but intimately and firmly connected to the bladder by a dense cellular tissue. I may also add, wherever the rupture of the anterior parietes of the vagina has been known to have happened, then the bladder has been torn.

Perhaps I am not authorized to draw any important inference from these cases, which has not already been made from others, but I need not apologize for offering the following general remarks on the subject:—

Laceration of the uterus proves fatal in one of three ways; either the woman dies very speedily from the disturbance of the vital functions immediately following the injury, and which no doubt

* See Postscript.

is brought about by the intimate sympathy between the uterus and the brain; or, death happens less speedily, but at an uncertain period, from the consequent inflammation of the uterus, peritoneum, and abdominal viscera; or, surmounting all these dangers, the woman eventually sinks from an incapacity of her natural powers to repair the injury sustained.

With all these difficulties and dangers in view, we could not have felt surprised if recovery had never taken place. Women, however, have sometimes survived when the laceration has been of the cervix of the uterus, of the vagina, or of both, but never, so far as I know, when the body or fundus of the womb has been implicated.

From comparing the result with the injury sustained in the two cases I have reported, a question arose in my mind, whether any satisfactory reason could be given, why laceration of the anterior part of the cervix uteri and vagina should prove less fatal than laceration of their posterior part? That such is the fact, I satisfied my mind, by looking to all the records of successful cases I have been able to discover, and finding that in all, the laceration was either to one side or to the front.

It appears to me that the intestines or bladder must of necessity come into contact with the

wound when at the fore part, and do not only serve to prevent a further effusion of air or blood into the abdominal cavity, but perform a much more beneficial part, by throwing out coagulable lymph, receiving this natural glue poured out by the edges of the wound, in this way becoming adherent to them, and forming their temporary bond of union, until granulations have sprung up, contracted, and cicatrized, the whole of which process also this arrangement puts in the most favourable train.—Whilst at the back, the rectum being too closely bound down to the sacrum, there is neither bladder nor intestine to close the wound, and hence its whole extent has to be filled up by granulations heaped upon granulations, and before nature is enabled to accomplish her task she sinks, exhausted by the constant source of irritation, or falls a sacrifice to an attack of inflammation consequent upon it. Whether this explanation will prove as satisfactory to the minds of others as it has done to my own, I am of course unable to divine: the fact however is, that lacerations of the posterior part of the vagina and cervix uteri have always proved fatal.

Recovery from laceration of the front or sides of the cervix uteri and vagina, has taken place under very different circumstances. It has happened when the child has not passed into the abdomen, but has been extracted from the uterus; and it has happened when the child has passed

into the abdominal cavity; when it has been allowed to remain there; when it has been extracted through an opening made in the abdominal parietes; and when it has been brought back through the laceration, and delivered "per vias naturales."

When the child has passed into the cavity of the abdomen, and has been allowed to remain there, it is not to be denied that women have lived, but their recovery has almost invariably been so imperfect, that they have for years dragged on an existence miserable to themselves and burthensome to their friends; the children decaying and being discharged by abscess slowly and painfully into the intestines, or together with fæces through the abdominal parietes; or their recovery has only been for a short time, at the end of which they have been attacked by inflammation and died. Whilst, when the women have lived after delivery by turning or gastrotomy, the recovery has been perfect; so perfect, that they have in several cases subsequently borne children in safety.

The cases of recovery under any circumstances have been so rare, and so few of the unsuccessful ones have been recorded, that we cannot positively state, gastrotomy has saved a greater proportion of lives than delivery by the natural passages; or that this latter method has been more successful

than gastrotomy; but that one or the other method is to be preferred, according as it is practicable, with less mechanical injury to the woman than the other, is a position to which all must assent.

From the foregoing facts I am of opinion the following principles are deducible:—

1. That delivery ought always to be accomplished, inasmuch as it certainly does not lessen, but I believe increases the chance of the woman's surviving; if she lives it insures her a more perfect recovery; and moreover it affords the only, although confessedly remote, prospect of saving the child's life.

2. If the child remain in the uterus, it ought to be extracted by the forceps or lever, if possible; by the perforator, if these will not succeed; or by turning, if neither kind of instrument is applicable. The forceps are to be preferred for a very obvious reason; and embryotomy is preferable to turning, because the pelvis being almost always small, this latter operation would often not succeed, and it would endanger or insure an increase of the mischief.

3. If the child have but partially escaped into the cavity of the abdomen, it ought to be brought back, if we can accomplish it without the greatest violence; and if this be not possible, it must then

be taken through an opening in the abdominal parietes.

4. If the child have entirely escaped into the cavity of the abdomen, it should be brought back through the laceration, if practicable, without great force, which I believe will always be the case when the laceration is of the cervix or vagina, and when the operation is undertaken within any reasonable time from the period of the accident.

5. That where turning is not practicable, from the firm contraction of the uterus, or where it would endanger a great increase of the rent, there gastrotomy should be had recourse to, as affording the woman a better chance of living, a much better chance of perfect recovery, than a total abandonment of her to the "vis medicatrix naturæ", and as giving her child the sole chance of surviving.

6. That whatever is done should be done speedily, for these reasons; if the child have not already passed into the cavity of the abdomen, the probability is that it will very soon; if the child have passed into the cavity of the abdomen, the shorter time it is in contact with the viscera, the less likelihood will there be of subsequent inflammation, and the less chance will there be of the uterus contracting firmly.

I repeat again, that I lay no claim to originality

in the principles of practice I have exhibited, and therefore I shall not incur the charge of vanity when I say that, if they were acted upon promptly and with judgment, I should not despair of hearing of other successful cases of lacerated uterus.

P. S.—Sept. 6th, 1827.—I have this day seen Mrs. Wren, and found her in good health; the menses appear regularly and naturally, and she assures me that she has not any complaint to make.

A CASE

OF

RUPTURE OF THE UTERUS,

SUCCESSFULLY TREATED BY

DR. SMITH,

OF MAIDSTONE.

COMMUNICATED BY

DR. LOCOCK.

Read April 25, 1827.

ON Saturday morning, July 16, 1825, I was requested to visit Mrs. H. a stout, healthy, well-made woman, about forty years of age, the mother of nine children. Her last labour, two years since, was severe and tedious; she was however delivered without instrumental assistance. Considerable constitutional irritation followed, with some sloughing of the vagina and bladder, and she has since been unable to retain her urine, which passes per vaginam.

I was informed that Mrs. H. was about seven months gone with child; she was taken in labour early in the morning; the membranes broke about five, and Mr. Whatman, her medical attendant,

was called immediately. He found the pains sharp, and regular in their recurrence, and the presentation natural. I met Mr. Whatman in consultation about ten o'clock; the pains were then extremely acute, short, and frequent, and Mrs. H. complained very much of her back. On examination I found the os uteri dilated nearly to the size of a crown piece, but rigid; the head of the child could readily be felt at the brim of the pelvis, the vagina was rather swollen and hot, countenance distressed, tongue moist and clean, pulse about a hundred, not hard nor particularly full. It was agreed that eight or ten ounces of blood should be taken from the arm, that a common Enema should be given directly, and a draught, containing twenty minims of Tincture of Opium.

On my return from the country in about three hours, Mr. Whatman informed me that the veins in the arm were so covered with fat that he had not been able to bleed our patient, but the glyster had been administered, and the anodyne draught taken.

The head, when Mr. W. last made an examination, appeared to have advanced a little, since which Mrs. H. had experienced a most severe pain in "her back and through her belly", to use her own expressions, "as if a sword had been thrust through her", immediately followed by a considerable discharge of blood from the vagina (according

to the nurse's account a pint or more), faintness, cold extremities, and sickness. This occurred about an hour before my return. The labour pains, which immediately before were frequent and strong, had now entirely ceased. Mrs. H. complained of no pain in the back, but of great soreness and continued pain in the abdomen, the countenance was sunk, and had a peculiarly anxious expression. Pulse 130, and extremely feeble, skin cool; the abdomen had become more irregular in shape, and very tender on pressure. I named my suspicion to Mr. Whatman that a rupture of the uterus had taken place, and on examination this opinion was confirmed, for no part of the fœtus could be distinguished either by Mr. W. or myself, and in a subsequent examination, I distinctly felt a rent about two inches from the os uteri, across the posterior part of the uterus, nearly three inches in length, through which two fingers readily passed. The edges of the rupture were extremely thin.

We agreed that it would be adviseable to deliver immediately by turning the child; but prior to performing that operation, we informed Mrs. H.'s husband of her desperate situation, and as there seemed every reason to believe the case would speedily terminate fatally, we suggested for his further satisfaction, and also to lessen our own responsibility, that the assistance of Mr. Charles should be requested. Mr. C. was from home, and the state of our patient becoming rapidly more critical, it

was determined that delivery should be immediately attempted. Mrs. H. had already taken fifty drops of Tincture of Opium. Mr. W. now endeavoured to pass his hand into the uterus, but found a resistance he could not overcome, and requested I would make the attempt; neither of us, however, nor Mr. Charles, who had just arrived, were able to pass the hand farther than the knuckles, in consequence of a contraction, which at first appeared to be formed by the vagina, but on more accurate examination, was ascertained to arise from part of the os uteri adhering to the vagina under the pubis, and presenting a hard sharp edge, which firmly resisted the passage of the hand; the effect, probably, of the inflammation and mischief which had followed the former labour. The opiate was repeated, and every effort, consistent with the safety of the patient, was made to dilate the os uteri, but without effect; the same obstruction to the passage of the hand still continued. The symptoms were rapidly becoming more urgent; constant nausea, with frequent efforts to retch, although little was rejected from the stomach, violent abdominal pain, great restlessness, quick breathing, faintness, feeble running pulse, which could not be counted, and cadaverous countenance; under these circumstances we deemed it imperative to deliver as soon as possible, for it appeared evident, unless this was speedily accomplished, our patient would die undelivered.

It was agreed, therefore, on consultation, to dilate the os uteri by a slight incision through the hardened and unyielding part, so as to allow the hand to pass. This operation was performed with great nicety and dexterity by Mr. Whatman; and after some little trouble the hand was passed into the uterus, the feet brought down, and the body of the child delivered; but there was so much obstruction to the passage of the head, that it was deemed adviseable to perforate through the lambdoidal suture, which I accomplished with little difficulty; and having lessened the head, the delivery was speedily completed, and the placenta soon followed. There were slight uterine efforts during the delivery, and very little hæmorrhage.

We were several times seriously alarmed lest our patient should sink during the operation, and were obliged frequently to urge her to take wine, brandy and water, ammonia, &c. A draught, containing an hundred drops of Tincture of Opium, was given immediately, and very soon rejected; a second draught, with fifty drops, was then taken and retained. Mrs. H. continued in the most alarming state for about two hours; great nausea, unconquerable restlessness, pulse running, and at times not to be felt, quick breathing, sighing, cold extremities, and Hippocratic countenance. The feet were directed to be fomented, and brandy and water, or brandy and milk, to be given frequently.

During the evening there was a trifling improvement in the symptoms; the skin was warmer, and the pulse not quite so feeble, but extremely quick. A sudorific draught, with twenty drops of laudanum, was ordered to be taken directly, and repeated every three hours, with five drops of laudanum.

A lotion was ordered to be constantly applied to the abdomen, upon soft linen. The brandy and water, milk, &c. to be continued occasionally.

Sunday morning, July 17.—Our patient had passed a restless night; the countenance sunk and anxious, with a peculiar expression, indicating abdominal mischief, breathing short and oppressed, fifty-two in a minute; abdomen considerably distended, and great tenderness on pressure; pulse 140, weak, wind in the stomach, and nausea very troublesome. A dozen leeches to be applied to the abdomen directly, and the bleeding to be encouraged by fomenting the part; the application of the cold lotion to be afterwards continued, from which, our patient says, she has experienced great relief. The draughts to be repeated.

Evening.—The leech-bites bled well, but Mrs. H. had passed a restless day. The abdominal tenderness and distention were not at all relieved; the pain was most acute on the left side of the abdomen, nausea very troublesome, pulse 138, feeble, skin not particularly hot, tongue moist, the urine

passed freely per vaginam, and the cloths were scarcely tinged by the lochia. A large blister was directed to be applied over the left side of the abdomen. The draughts to be repeated, and two grains of Calomel, with one of Opium, to be taken at night.

Monday morning, 18th.—Night restless, constant nausea, tongue moist, and but little furred, less abdominal pain on pressure; the greatest tenderness now felt is in the epigastric region; pulse 130, round and more distinct, breathing 40, skin moist and not hot, lochia trifling. The blister had drawn well. As the bowels had not been relieved, a common glyster was directed to be given immediately; leeches to be applied to the region of the stomach; and a draught to be taken every three hours, containing a small dose of Sulphate of Magnesia, and three drops of Laudanum.

Evening, 10 o'clock.—Our patient had suffered much from the heat of the weather, Fahrenheit's thermometer having been eighty-one degrees in the shade during the day. Countenance improved, speaks more cheerfully, abdominal pain and distention less, flatus troublesome, passed plenty of urine, discharge trifling, tongue moist, rather more furred, pulse 120, soft, breathing 36, occasional sighing, skin moist, complains of head-ache, one motion, blister discharges well, and is extremely sore. Mrs. H. continues to experience great relief

from the lotion, which has been constantly applied to the part not blistered. Mrs. H. has been confined to gruel, barley water, and tea, since Saturday night; this evening, by her own request, she was allowed some coffee.

Tuesday morning, 19th.—Passed a better night, having taken 20 drops of laudanum at bed time, and slept a good deal, nausea less troublesome, countenance languid, abdomen more free from pain; complains of pain between the shoulders; pulse 120, neither full nor weak, breathing 30, passes plenty of urine, two dark fluid motions, has passed no coagula.

Evening, 10 o'clock.—Skin hot, pulse 130, more abdominal pain and distention, particularly about the situation of the cæcum; has passed five dark offensive motions. The laudanum to be repeated, with a pill composed of two grains of Calomel and five grains of Dover's Powder, and an opening draught, early in the morning.

Wednesday, 20th, being eight o'clock.—Mrs. H. had passed a restless night, although she had dozed occasionally; countenance more anxious and manner quick, pulse 124, rather feeble, breathing 32, abdomen more painful, particularly on the right side; two motions. To apply a large blister to the right side of the abdomen.

Evening, 10 o'clock.—Mrs. H. had passed eight or ten small fluid motions, the first five or six dark and offensive, the last two not so. Pulse 124, breathing 36, countenance sunk, complains of pain in the abdomen, yet bears pressure better, no thirst, tongue clean and moist, great restlessness, pain between the shoulder-blades, urine in sufficient quantity, but dark and offensive from mixing with the discharge, which continues trifling. She was ordered some Mist. Cretæ and Opium, to be repeated if the bowels continued too open.

Thursday morning, 21st.—Passed a more comfortable night, three small motions, nearly of a natural colour, and less offensive; countenance languid, pulse 120, breathing 36, some pain between the shoulders and in the abdomen; the latter she attributes to medicine; bears pressure better. A cupful of weak broth occasionally.

Evening.—Three motions had been passed, pulse 112, breathing 32, less abdominal pain. A small discharge, like matter, was observed on the napkin, but the urine passing through the vagina, the nature and extent of the discharge could not be accurately ascertained. About three o'clock the feet became cold, with great faintness, which continued about half an hour. The night draught to be repeated, and a draught, containing Camphor and Ammonia, to be taken every four hours.

Friday morning, 22d.—Slept a good deal, pulse

112, breathing 30, one good-coloured evacuation, tongue moist and clean, abdominal pain trifling, bears pressure well. The blister discharges much.

Evening.—Mrs. H. passed a comfortable day till four o'clock; she then complained of chilliness, cold feet, nausea, and faintness; the feet were fomented, and some warm sherry and water given, and in half an hour she found herself much relieved. The pulse was now 120, weak, breathing 34, skin cool and a little clammy, and tongue moist; she had passed two good motions; discharge trifling, but offensive. Repeat the Laudanum at night.

℞ Decoct. Cinch. ʒvj,
Inf. Rosæ, ʒiij,
Tinct. Cinch. Comp. ʒj,
fHaust. tertiis horis sumendus.

To take Arrow Root with milk, beef tea, and wine and water, if cold or faint.

Saturday morning, 23d.—Night restless, pulse 112, weak, face a little flushed, breathing better, 28, one good motion, discharge trifling, but has the appearance of pus, and is very offensive, abdominal pain less.

℞ Decoct. Cinch. ʒxj,
Tinct. Cinch. Comp. ʒj,
fHaust. tertiis horis sumendus.

Beef Tea and Arrow Root.

By the 29th the pulse was below 100, the abdomen free from pain, and our patient was able to be removed to the sofa: since the last report, she had occasionally suffered from diarrhœa, which yielded to the usual remedies. As both Bark and the Sulphate of Quinine did not agree with the bowels, she began yesterday to take Gentian, with some Sp. Ammoniæ Comp.

August 2d.—Pulse 90; no abdominal pain or distention. There is still a circumscribed hardness to be distinguished: the discharge has ceased, and the urine consequently is not offensive.

19th.—Mrs. H. has taken Bark three times a day since the 7th, has been progressively improving, and has to-day taken an airing; and on the 23d she removed from home for change of air.

March 23d, 1826.—Mrs. H. continues as well as before her last confinement.

REMARKS.

The severity, shortness, and frequency of the pains caused by the unusual resistance of the os uteri, would probably have been alleviated, if blood could have been taken from the arm, and thus have

allowed more time for the natural dilatation of the os uteri, and possibly have prevented the accident. I am aware that the os uteri, although partially thickened and indurated by disease, or other cause, will dilate sufficiently to allow a common sized child to pass at the full period. An instance of this kind occurred to me when residing in Sloane Street.

Mrs. ——, about 27 years of age, was taken in labour of her second child, at the full period, in September, 1813. On examination I found the os uteri partially dilated to the size of a crown piece, but one portion of it was hard, thickened, and unyielding, having a small excrescence growing from it. The pains were severe, and of regular recurrence, and had the effect of gradually dilating the healthy part of the os uteri, but the scirrhous portion remained unaltered.

It appeared probable that the natural efforts would be sufficient to complete the delivery, by the dilatation of the healthy part of the os uteri; conceiving, however, that the disease would be hurried on by the effects of the labour, and become eventually cancerous, I requested the opinion of an eminent accoucheur, who advised a small bleeding; and in about thirty-six hours from the commencement of the labour, the child was born by the natural efforts, and the patient recovered without any unusual symptoms.

In October, 1814, I was requested again to visit this lady. She considered herself nearly six months gone with child; she complained of sickness and considerable pain, which she attributed to piles. Suspecting that the disease of the os uteri was going on, I made an examination, and found it thickened, hard, and irregular, nearly throughout its whole extent. An eminent accoucheur met me in consultation, and our patient was kept tolerably easy by occasional opiates; she experienced however, now and then, slight bearing-down pains for two days; the pains then suddenly became violent, and after three or four hours excessive suffering, the child was expelled. The cancerous disease of the os uteri rapidly extended, and the poor lady died, completely worn out by suffering, about six weeks after her delivery.

In Mrs. H.'s case immediate delivery appeared to be the only chance of saving her life; there was no time to wait for the natural dilatation of that part of the os uteri which was not thickened and contracted, and we found the dilatation could not be safely effected by common means: the only alternative therefore appeared to be the Cæsarian Section, or the dilatation of the contracted and hardened part of the os uteri by an incision of sufficient extent to allow the hand to pass into the uterus. The former is so dreadful, and generally so fatal an operation, that the latter was without hesitation adopted.

It may be observed that our patient derived marked benefit from the free use of aperients and opiates, and the application of the cold lotion was always particularly grateful to her. I have found a similar application of decided advantage, in one or two cases of obscure abdominal inflammation, as recommended by Dr. Sutton.

I am inclined to think the rupture of the uterus is not of so rare occurrence as generally believed, and that the almost sudden deaths which we occasionally hear of taking place during, or immediately after labour, occasionally arise from this cause.

I have heard of three or four instances of this accident having occurred among my medical brethren in the neighbourhood; and a few weeks since I met a gentleman in consultation, who informed me that he had been called in the day before, by a midwife, to a woman in labour, who died before he could deliver her. On enumerating some of the symptoms, I told him I suspected the uterus had given way, and advised him to examine the body; he did so, and wrote me word that there was a rent in the uterus large enough to thrust his fist through.

ON

DISLOCATIONS

OF

THE VERTEBRÆ.

BY

W. LAWRENCE, F.R.S.

SURGEON TO ST. BARTHOLOMEW'S HOSPITAL, ETC.

Read June 12, 1827.

COMPLETE dislocations of the vertebræ without fracture, whether produced by accident or disease, are so uncommon, if we except the first and second bones of the neck, that the possibility of the occurrence has been doubted, and even denied by some of the highest authorities. In the "Traité des Maladies Chirurgicales", which contains the valuable results of his long experience, Baron Boyer points out the circumstances which prevent the displacement of the bodies of the vertebræ, and, without expressly denying it, appears clearly to disbelieve its possibility*. He asks the question, whether the bodies of the vertebræ can be luxated? alludes

* Tom. IV. Chap. IV. Article 4.

to the kind of accidents, under which such displacement has been considered probable, and then, having shewn the powerful obstacles to it, concludes by observing, that if we examine the cases in which dislocation has been supposed to have occurred, we shall find invariably that the posterior laminæ of the vertebræ have been broken; that in many instances they have been comminuted, and further that when the body of a vertebra has undergone any displacement, the laceration of the fibro-cartilage has been almost always accompanied by detachment of some portion of the bony substance.

Delpech represents it as a point proved by observation, that the bodies of the vertebræ cannot be dislocated*.

Sir A. Cooper† says, that "if luxation of the spine ever does happen, it is an injury which is extremely rare, as in the numerous instances which I have seen of violence done to the spine, I have never witnessed a separation of one vertebra from another through the intervertebral substance, without fracture of the articular processes; or, if those processes remain unbroken, without a fracture through the bodies of the vertebræ."

* Précis Elémentaire des Maladies reputées Chirurgicales. Tom. III. p. 42.

† Treatise on Dislocations and on Fractures of the Joints. 1st edition, p. 539.

Other surgeons, however, have affirmed that the vertebræ may be luxated. After pointing out, in his treatise on diseases of the joints, the circumstances which render this occurrence very improbable, Rust affirms that even the lumbar and dorsal vertebræ may be dislocated, and refers to instances recorded by various writers*. He mentions the following as a case of dislocation in the cervical region of the spine, successfully replaced by himself. "The injury was produced by a severe fall on the head. The neck was completely bent to the right side, the upper extremities already paralysed, and repeated attacks of convulsions and hiccough came on. Replacement was immediately attempted, and succeeded. I made the patient sit on the ground, and had the head drawn straight upwards by a strong assistant. The patient got well under the employment of cold locally."†

Mr. Bell mentions a case of complete dislocation between the last dorsal and first lumbar vertebra, with entire division of the spinal cord. A small portion of bone was broken off. He gives two views of the parts‡.

The greater mobility of the individual bones, the comparative smallness of their bodies, and the ob-

* Arthro-kakologie, p. 71.

† Medicinisch-chirurgische Zeitung, 1813, Vol. III. p. 127.

‡ On Injuries to the Spine and Thigh-bone, p. 25. Plate II. fig. 2 and 3.

liquity of the articular processes, point out the cervical vertebræ as those most likely to be luxated; at the same time the form of the neck, and its connexion with the head, are favourable to the application of such violence as may cause luxation. Hence not only does dislocation of the atlas occasionally occur, but we have also instances of luxated articular processes in the case of the five inferior cervical vertebræ. Baron Boyer even considers that this may happen without external violence, and that the inferior articular process of a cervical vertebra may be carried in front of the superior articular process of the vertebra below it, by a sudden and forcible rotation of the head and neck towards the opposite side. He says that "Desault mentioned in his lectures the case of an advocate, who met with this kind of dislocation, by turning his head suddenly round to see who was coming in at a door situated behind his seat. Chopart also shewed us a young man, 24 years old, in whom a similar accident had occurred, in consequence of an extreme rotation of the head, leaving the head permanently inclined upon the left shoulder."*

Baron Boyer mentions another instance, which Desault used to relate in his lectures, of a child, eight or nine years old, who, in turning heels over head on a bed, luxated the right lower articular process of a cervical vertebra. The head was turned

* P. 114.

towards the left shoulder, and so firmly fixed that it could not be brought into its natural position, even by the employment of considerable force. When the proposal of attempting reduction was made, Desault decidedly discountenanced it*. Another case of a child terminated fatally, under the employment of efforts at reduction; and, when the body was examined, one of the inferior articular processes of a cervical vertebra was found dislocated forwards†. It does not appear that Baron Boyer had ever ascertained the existence of this dislocation by actual examination, and it is even doubtful whether he had ever seen a case at all. Further, he admits that no example can be adduced of both articular processes being dislocated at the same time.

Sir A. Cooper‡ says that he has never seen a dislocation of the cervical vertebræ: he does not deny the possibility of the occurrence, but seems hardly to believe it.

In the anatomical museum at St. Bartholomew's Hospital there are specimens of luxated cervical vertebræ. In one of these the right inferior articular process of the fifth vertebra is dislocated forwards. The portion of the vertebral column above the seat of the injury is twisted to the left, and the

* P. 117. † P. 118. ‡ On Dislocations, p. 539.

body of the fifth, having been partially displaced, projects beyond that of the sixth vertebra. This displacement could not have been effected without laceration, or considerable injury of the fibro-cartilage. The upper and anterior part of the body, both of the sixth and seventh vertebræ, has been slightly fractured on the left side, without detachment of the broken portion. It appears as if a small piece of the edge had been broken off by the twisting of the spine to the left. As the specimen, which is dried and inclosed in a bottle, has not been completely cleaned of the soft parts, the exact nature and extent of the fracture cannot be ascertained, nor can it be pronounced with perfect certainty, that there is no fracture of the processes. For the same reason we cannot now make out the precise degree and kind of injury sustained by the fibro-cartilage.

In another, the inferior articular processes of the fifth cervical vertebra are partially separated from those of the sixth, having been drawn upwards; but they have not been thrown forwards. The bodies of the same vertebræ are partially separated behind, but they preserve their natural level and relative position in front. The connexions of the two vertebræ must have been torn by a force applied behind, bending the neck powerfully forwards, and the bones must have subsequently resumed their natural position, so that there would have been no

pressure on the spinal marrow. This kind of injury has been called by Mr. Bell*, diastasis or subluxation.

A third specimen exhibits a dislocation of the sixth upon the seventh cervical vertebra. The inferior articular processes of the sixth are completely displaced forwards, and its body projects over that of the seventh. The spinous processes have been sawn out, so that it is uncertain whether they were injured or no. This may be deemed a case of complete dislocation; but there is an appearance of fracture near the basis of the articular process, the exact nature of which cannot be ascertained in the present state of the specimen. Mr. Stanley considers that this fissure was made by the saw in removing the spinous processes.

* Observations on Injuries of the Spine and Thigh-bone, p. 9, fig. III. plate III. Diastasis is called by Mr. Bell, "separation of the vertebræ by violence, where they resume their relations again", p. 9.—Speaking of subluxation, he says, "the accident happens to young people, and from the operation of a force, which, in advanced years, would fracture the bodies of the vertebræ. A weight on the head and shoulders overpowering them, and bending them double, the articulating processes of the upper lumbar vertebræ are burst from their connexions; if they again fall into their places the case is diastasis; but sometimes their edges meet, then it is subluxation; they are not restored to their natural position." P. 11.

Mr. Bell relates a case at p. 9, to exemplify diastasis occurring between the last cervical and first dorsal vertebra. The parts are represented in pl. III. fig. III.; in the explanation of the figure, he calls it a specimen of subluxation.

The following case, which was recently under my care at St. Bartholomew's Hospital, shows that complete dislocation, both of the articular processes and body, without fracture, may occur in the cervical region of the spine. I submit at the same time to the examination of the Society, the dislocated bones, and two drawings of them.

CASE.

Charles Butcher, 22 years old, a robust young man, in perfect health, was brought to the hospital at five o'clock in the afternoon of January 8th. He was carrying a heavy barrel on the back of his head and neck, slipped in descending some steps, and fell on the buttocks, the burthen resting on the head and upper part of the neck. He was immediately deprived of sensibility in the trunk and limbs, and of all power over the voluntary muscles of those parts. When he was brought to the hospital, he was completely insensible and incapable of voluntary motion below the neck. The functions of the brain were not disturbed. Respiration was apparently performed merely by the diaphragm: its descent enlarged the chest, while the elasticity of the thoracic and abdominal parietes restoring the parts, which had been previously displaced by the diaphragm, seemed to be the only agent of expiration. The chest was motionless, except towards its inferior margin, and the abdominal muscles were

soft. The pulse was weak and slow, and the body cold; the penis was in a state of permanent erection. No irregularity in the line of the spinous processes could be discovered by accurate examination. He was placed on the back in bed, with the head carefully supported. In four or five hours the pulse had become full and strong, and the heat of the body was greater than natural; respiration was rather hurried. Venesection to sixteen ounces, a dose of Calomel and Jalap. Four ounces of urine were drawn off by the catheter.

Jan. 9th.—He dozed in the course of the night, but did not sleep. There is pain in the lower part of the neck. He can move the arms very slightly, and has a little feeling in the front and upper part of the chest. Dark offensive stools have been passed involuntarily. When the catheter was introduced in the morning, only a table-spoonful of urine came away: six ounces of high-coloured urine were drawn off in the evening. Respiration is slower, the pulse full, heat natural. Saline draught every six hours.

10th.—Feels better this morning, having slept three or four times in the night, for about an hour each time. Has experienced a tingling sensation in the hands, and is sensible to impressions on the upper part of the arms and thighs: stools have passed involuntarily; he complains of distention of the bladder; eighteen ounces of high-coloured urine

were drawn off, and deposited a dark-brown sediment. The priapism continues. Four ounces of urine drawn off in the evening.

11th.—He has not slept during the night, and is worse this morning. Respiration becomes difficult, so that speaking requires a painful effort; and the countenance expresses distress and anxiety. The tongue is light-brown, and dry in the middle. Fæces have passed involuntarily, and six ounces of urine, lighter-coloured than that of yesterday, have been drawn off. Breathing became more laborious in the evening, and the countenance extremely anxious; the pulse weak and low, surface of the body cold. He expired at one in the morning of the 12th, from increasing embarrassment in respiration.

Examination.—No displacement nor irregularity could be discovered by external examination, when the body was laid on the face. After cutting away the muscles from the back of the spine, the cartilaginous surfaces of the superior articular processes of the fifth cervical vertebra came into view: they were exposed in consequence of the inferior processes of the fourth vertebra having been completely dislocated forwards, and remaining fixed in their unnatural position. The yellow ligaments connecting the laminæ of the two vertebræ (ligamenta subflava) were torn through, and the bifid apex of the fourth spinous process lay in close con-

tact with the basis of the fifth. On the front of the column an unusual projection was observed, but the anterior longitudinal ligamentous expansion was entire. The body of the fourth was completely detached from that of the fifth vertebra, the connecting fibro-cartilage being torn through, and the body of the former projecting by its whole depth in front of the latter. In consequence of this displacement, the antero-posterior diameter of the vertebral canal is lessened by about one-third. The section of the bone was not made till some days after death, so that the recent state of the spinal marrow could not be estimated.

The nature of the accident in this case sufficiently accounts for the effect produced. The head and four upper vertebræ, were driven forwards by the heavy burthen which rested on them, while the fall on the buttocks forcibly propelled the lower part of the column in the opposite direction. As the case was simple dislocation, unattended with any other effect, except such pressure on the spinal cord as sufficed to destroy sensibility, and the power of motion below the seat of injury, it affords us the opportunity of observing how, and in what time, death occurs under such circumstances. It is caused by the paralysis of a large portion of the muscles concerned in respiration, and by the consequently imperfect mode in which the mechanical phænomena of that function are executed.

The intercostal and abdominal muscles, and nearly all those of the chest, which are capable of assisting in the motions of inspiration and expiration, were completely palsied in this case, and the diaphragm alone remained capable of action, the pressure on the spinal cord being below the origin of the phrenic nerve. Breathing was at first so well executed by this single power, that, on a cursory view of the patient, there was nothing alarming in his situation: the inadequacy of the diaphragm, however, to the sole performance of respiration soon became apparent, and the patient sunk on the fourth day under the continually increasing difficulty.

In a patient under my care at St. Bartholomew's during the last winter, with fracture and displacement of the spine at the seventh cervical vertebra, and paralysis of the parts below, death occurred on the tenth day. Sir A. Cooper observes, that "Death ensues in these cases in from three to seven days, as it (the injury) is seated in the fifth, sixth, or seventh vertebra. I have scarcely known the subject of this injury to live beyond a week, and but rarely to die on the second day, although they sometimes do if the fifth cervical vertebra has sustained the injury." *

* On Dislocations, pp. 555, 556.

Dislocation of the Atlas and Axis from Disease, with consequent Anchylosis.

Although accidental luxation of the two first cervical vertebræ is immediately fatal from pressure on the commencement of the spinal cord *,

* A case, which occurred to Mr. Cline, and is related by Sir A. Cooper, forms an apparent exception to this statement. A boy, who had met with a severe fall on the head, and had been subsequently obliged to observe great caution in all the motions of that part, steadying it and supporting it with the hands, died twelve months after the accident. Mr. Cline found "the first vertebra of the neck broken across, and that the dentiform process of the second vertebra had so far lost its support, that under the different inclinations of the head, it required great care to prevent the spinal marrow from being compressed by it, and as he could not depend upon the actions of the muscles of the neck, he therefore used his hands to support the head during different motions and positions." On Dislocations, pp. 549, 550.

If the case recorded by Ehrlich was, as he supposes it to have been, a dislocation of the atlas, it proves that such an accident is not only not necessarily fatal, but that it even admits of complete remedy. A young man of sixteen fell in carrying a sack of flour upstairs, and his head was forcibly bent forwards by the burthen. He was found senseless, with livid countenance, prominent eyes, tongue hanging out of the mouth, respiration slow and interrupted, and pulse scarcely sensible. The limbs were motionless and apparently paralysed, urine and fæces had passed involuntarily. The head was inclined to the right shoulder and had lost its firmness, so that it fell by its own weight from side to side when not supported. The articular process of the second vertebra projected on the left side. Ehrlich considered it a case of dislocation with pressure on the spinal cord, and caused extension of the head to be made, while he endeavoured to force back the atlas, and to bring the second vertebra forwards. After some at-

these bones may be slowly displaced, in consequence of disease in their articulations, without affecting the functions of that important part; and even, after disease is at an end, may become permanently fixed in their new positions by anchylosis. A remarkable specimen of this kind was given to me by Mr. Wigan, a member of this Society; and I lay it before the Society for their examination, as the nature and extent of the displacement could hardly be credited without actual observation. Mr. Wigan, who attended the patient throughout, had promised to furnish me with his notes of the case; but he could not find them before he left England; I can therefore only mention the few leading circumstances in the history, which Mr. Wigan communicated to me verbally when he brought me the parts in their recent state.

CASE.

At the age of five or seven, a child became the subject of an illness supposed to be hydrocepha-

tempts, the replacement was effected with a snap. The head now became steady and the arms moved, but the patient remained insensible, with dilated pupils; the respiration and pulse were improved. Consciousness returned on the next day. Great swelling of the neck came on from ecchymosis and subsided in a short time. He was much recovered in eight days, and soon after got quite well. Chirurgische Beobachtungen, Vol. II. No. 25.

lus. After it had existed for some time, a swelling took place in the side of the neck, obviously containing fluid, and this slowly increased to a considerable magnitude, so that its contents must have amounted to several ounces. Pressure on this swelling affected the brain, producing a state of coma. It was supposed at this time that the fluid in the neck communicated with that suspected to exist in the ventricles of the brain. The child used to move the head cautiously and slowly, supporting it with the hands at the sides. After a long continuance the symptoms slowly subsided, and at last entirely disappeared, together with the swelling of the neck. At no period of the complaint was there any interruption or diminution of sensation or voluntary motion, and the recovery of health and activity was complete, the child being able to walk and run, and engage in the active sports suited to its age. There was nothing to attract particular notice in the position of the head. After some time had elapsed, disease came on in the lumbar vertebræ, attended with bending forwards of the spine and the formation of a large lumbar abscess. In consequence of this affection the child died at the age of twelve.

Examination.—The head was examined during the hottest part of last summer, and the brain had become so soft, that the changes produced in it by disease could not be ascertained. Mr. Wigan brought to me the basis of the skull, in which we

were surprised at observing a considerable bony prominence standing up in the right side and front of the foramen magnum.

The projection in question was smoothly covered by the dura mater, and it was soon apparent that it must be the dentiform process of the second vertebra. When the soft parts had been completely removed by maceration, I found an extensive displacement of the occiput, atlas, and axis, and a firm consolidation of these bones in their new relative positions by the complete bony anchylosis of several articulations. The atlas is partially dislocated towards the left, and at the same time thrown a little forwards and upwards; hence the right and posterior part of its bony ring intercepts a considerable portion of the spinal canal. The middle anterior protuberance now corresponds to the left side of the basilar process; the extremity of the left transverse process projects three quarters of an inch beyond those of the two following vertebræ, while the right transverse processes of those vertebræ project one quarter of an inch beyond the corresponding one of the atlas. A considerable part of the right side of this bone has been destroyed by absorption: that is, the surfaces by which it is articulated to the occiput and atlas, a part of the transverse process, and that groove on which the right vertebral artery rested. The axis is completely dislocated from the atlas and occiput to the right, so that its left portion in-

tercepts about one third of the spinal canal, and the dentiform process projects by its whole length, into the cavity of the skull at the anterior part of the foramen magnum, close to the right anterior condyloid foramen.

In the natural position of the parts, the apex of this process is a little below the level of the occipito-atlantal articulation; here it is an inch above the same level, while its projection into the cavity of the skull is between five and six-eighths of an inch. The lateral displacement is no less extensive; the measurement from the left anterior condyloid foramen to the middle of the basis of the dentiform process being seven-eighths of an inch, while the distance from the right foramen to the same point is only two-eighths. We cannot but be astonished at finding that the immediate pressure of this bony projection on the under surface of the medulla oblongata caused no paralytic affection, even when we allow for the very gradual manner in which it must have taken place. The course of the right lingual nerve and vertebral artery must have been greatly altered.

The bodies of the second and third vertebræ are displaced towards the right, so that a line drawn along their middle and continued upwards, would strike the right margin of the basilary process; and the small tubercle on the anterior arch of the atlas corresponds to the left side of those bodies.

The right occipital condyle, the remains of the right transverse process of the atlas, the inferior articular plane of the axis, and the right side of the basis of the dentiform process are anchylosed, so as to form one solid bony mass.

The left occipital condyle is partially anchylosed with the atlas; the left articular plane of the axis, its transverse process, and that of the third vertebra, are all consolidated with the partial anchylosis just mentioned. The articular processes of the axis and the third vertebra are anchylosed, the union extending on the left side as far as the bases of the spinous processes. The bodies of the axis and third vertebra are not anchylosed.

The preternatural bony connexions just enumerated are perfect, equalling in solidity the natural bony structure, so that the limits of the anchylosed bones are confounded. The bony texture is quite natural; there is no roughness of surface, no diminution of solidity, nor any appearance of caries.

The dimensions of the vertebral canal at its commencement are greatly reduced by the extensive displacement of the atlas and axis. The antero-posterior diameter of the foramen magnum is in this case one inch and a half; the greatest measurement from side to side is one inch and a quarter. The diameter of the ring of the third vertebra,

from side to side, is seven-eighths of an inch, from front to back six-eighths. The measurement of the canal, between the displaced portions of the atlas and axis, is half an inch from before backwards, and five-eighths of an inch from side to side.

The history and examination of this case clearly show, that the opinion originally entertained of its being hydrocephalus was altogether erroneous, that the primary disease was an affection of the articulations, the fluctuating tumour in the neck being a chronic abscess consequent on that affection, while the spontaneous disappearance of the tumour is referrible to the cessation of the irritation which caused it. The swelling bore the same relation to the vertebral disease that lumbar abscess does to disease in the lumbar region of the spine.

OBSERVATIONS SUGGESTED BY THE FOREGOING CASE.

Although disease of the upper cervical vertebræ, similar to that which had occurred in the preceding case, is not uncommon, the symptoms of the affection have not been carefully attended to, nor its history clearly made out; so that it is hardly mentioned by any English writer, while by most the subject is altogether unnoticed. It has, no doubt, been overlooked, in consequence of the affected parts being out of sight and reach, and the

symptoms being therefore somewhat obscure, and liable, on superficial observation, to be confounded with those of other affections. Professor Rust, of Vienna, has given the best account of the disease. He first noticed it shortly in the Salzburg Medico-Chirurgical Journal*, and afterwards described it at greater length in his work on diseases of the joints†, where he mentions that he had seen thirteen cases, in all of which the symptoms were nearly alike.—Pain in the neck, becoming more severe at night, or in swallowing a large mouthful, or drawing a deep breath, is the first symptom. This pain affects one side of the neck, especially when the head is moved towards the shoulder; it extends from the larynx towards the nape, and often to the scapula of the pained side. No external alteration is perceptible; but firm pressure on the region of the first and second vertebræ produces considerable pain, and thus points out the seat of disease. The difficulty of swallowing and breathing, and hoarseness increase, alternating with pain in the neck, which seems to fix about the back of the head, and becomes intolerable on moving that part. The head sinks towards one shoulder, the face being turned a little down, for

* 1813, V. III. p. 108, 109.

† Arthrokakologie, 1817. § 111—119.

The short but clear notice of the subject by Roche and Sanson in their "Nouveaux Elémens de Pathologie Medico-Chirurgicale. Tom. II. p. 255—258", seems to have been derived chiefly from the observations of Rust.

in general the articulations are affected on one side only, and that was the left in seven out of nine examinations after death. If both sides are affected the head will incline directly forwards. In this state things continue for several weeks or months; and before worse symptoms come on, there is often apparent improvement, freer motion, and more natural situation of the head. But the uneasiness in speaking and swallowing returns, the pain becomes more severe and extensive, the head falls a little backwards and sinks towards the opposite side. The patient feels as if the head were too heavy, and he carefully supports it with his hands, when he moves from the sitting to the lying position, or vice versâ. This may be considered a pathognomonic symptom of the affection. Another symptom, which at this period shows the true nature of the disease, is a peculiar expression of pain in the countenance, which, combined with the position and stiffness of the head, constitutes so characteristic an assemblage of appearances, that it is enough to have seen it once, in order to recognize it again immediately. This look of the patient, which Rust has endeavoured to represent in an engraving, consists especially in a general alteration of the features, with heavy motion of the eyes, and a dull melancholy expression of internal painful sensations. More active indications of severe suffering are observed whenever the head is moved.

In the further progress of the case, noise in the head, deafness, giddiness, cramps and convulsions, partial paralysis, particularly of the upper limbs, loss of voice, purulent expectoration, and hectic symptoms supervene. Generally, no external change is observable, either in the neck or in the nape; and Rust observed, in one case only, swelling of the affected side, which broke and left fistulous ulcers. But the slightest pressure in the region of the three upper vertebræ is acutely painful, and sometimes in the advanced period of the disease a grating of rough surfaces is distinctly perceptible when the head is turned. The patient may continue for months in this helpless and painful state, and then dies, either from exhaustion and debility, or, which is more frequent, suddenly and unexpectedly.

Such is Rust's description of this formidable disease, which we can have no hesitation in regarding as originally ulceration of the cartilages, proceeding to destruction of the ligaments, and caries of the bones, and extending in various shapes and degrees to the neighbouring important parts. I have not met with any instance illustrating the condition of the disease, while confined to the articular surfaces. Reil shortly mentions the case of a young man who was attacked with what was deemed inflammatory sore throat, the head being bent forwards and towards the right.

The sore throat was removed, but the neck became more bent. Hectic fever came on, and the patient died with paraplegia on the seventeenth day.

The occipital condyles, the bodies of all the cervical, and of the four upper dorsal vertebræ were found in a softened state, while the articular surfaces of the condyles and the two first vertebræ were partly destroyed*. Here then, in addition to the ulceration of the cartilages, there seems to have been extensive inflammation of the bodies of the vertebræ.

Mr. Bell mentions two instances in which the connexions of the occiput and atlas, and those of the atlas and axis had become so much weakened by disease, that they gave way under a movement of the head forwards, causing sudden luxation of the dentiform process, and immediate death by pressure on the spinal cord. A figure is given representing the parts in one of these cases, but the condition of the articular surfaces is not described†. The appearances of the diseased parts in a more advanced period are described by Rust. "I have always", says he, "found, in larger or smaller quantity, matter between the pharynx and vertebral column; it has sometimes been of a

* Fieber-lehre. 2d Edit. Vol. II. p. 356.

† Observations on Injuries of the Spine, &c. p. 27. pl. III. fig. 1.

good kind, sometimes sanious. The pharynx is more or less ulcerated (*excoriirt*), and the periosteum and ligaments of the two first vertebræ are destroyed. I have always found the original seat of disease in the articulations of the occiput and atlas, and of the atlas and axis; caries has attacked the occipital condyles, more frequently the left than the right, the atlas and the dentiform process. Where death has come on suddenly, the diseased dentiform process has been entirely broken off, or blood has been effused from ulceration of the vertebral artery, or pus has been found in the chest. The neighbouring important organs may be more or less seriously affected. Serous effusion is sometimes found between the dura mater and the arachnoidea, and in the ventricles. In the vicinity of the foramen magnum, where the space for lodging the spinal cord is sometimes much contracted, the dura mater is found livid, ulcerated and sloughy, and the neighbouring parts of the brain and medulla more or less altered in appearance. I have placed several preparations illustrating this affection in the Pathological Museum of the Vienna General Hospital"*.

In some cases the disease appears to be confined

* Arthro-kakologie, § 117.

In the fifth and sixth plates, figures are given of the occiput and three first vertebræ of a boy twelve years old, who died of the disease. The articular surfaces and other parts of the bones are carious.

to the articular surfaces; after destroying the cartilages and ligaments, and producing more or less extensive displacement of the occiput and two first vertebræ, it stops, and the process of reparation commences, ending in bony anchylosis, by which the displaced parts are firmly fixed in their new position. Yet, in these more favourable instances, there is great suffering during the inflammatory stage; the extension of active disturbance to the dura mater, and the neighbouring contents of the cranium and vertebral canal, may cause dangerous and alarming symptoms, while chronic abscess may be formed externally, as in the case which I have related.

The size of the foramen magnum and the dimensions of the vertebral canal in the neck, are considerably beyond what would be necessary for simply containing the spinal marrow, so that the free lateral movements of the head and atlas can be executed without any risk of pressure on that important part. Hence, spontaneous displacement can occur in these cases to a considerable extent, without impairing the functions of the spinal cord. The case, which I have related above, strikingly illustrates this circumstance; no paralytic symptoms occurred, and the spinal cord, which was still in its situation, when the bone was brought to me, was free from pressure, though the dimensions of the canal had been reduced to about one-half their natural extent. This circumstance

has not been sufficiently attended to by some of those who have described the affection. Observing the diminution of the vertebral canal, they seem to have inferred that the spinal cord must be compressed; and they accordingly mention such pressure among the ordinary effects of the disease*. In most instances, however, as there are no paralytic symptoms, we may safely conclude that there has been no pressure, while in the cases in which sudden dislocation of the dentiform process has

* Boyer expresses his surprise that patients should still live "malgré la gêne prodigieuse qu'un semblable déplacement a du exercer sur la moëlle épinière".—Trait. des Mal. Chirurg. Edit. 2. Tom. IV. p. 105.

Rust observes, that the pressure on the spinal cord, which the luxation of the occiput upon the atlas must cause in these cases, is not fatal, because it occurs gradually, p. 82. He mentions that a specimen exists in the anatomical cabinet at the Jardin des Plantes, where the contraction of the vertebral canal is so considerable, that a common quill cannot be introduced into the opening. Ibid. As he does not state that he had seen it himself, he probably speaks on the information of others, of the instance quoted at p. 415 from Buffon, in which the transverse measurement of the opening was three lines.

"En même temps que la tête se déplace, la moëlle épinière se trouve comprimée à son entrée dans le canal vertébral, et les mouvemens volontaires de tout le corps, y compris ceux de la respiration, deviennent ordinairement de plus en plus difficiles, ou même impossibles. Cependant, quand la maladie marche avec lenteur, le rétrécissement du canal, et par conséquent la compression de la moëlle vertébrale, peuvent être portés très loin, sans qu'il en résulte beaucoup de difficulté dans les mouvemens." Roche et Sanson, Nouveaux Elémens de Pathologie Medico-Chirurgicale. Tom. II. p. 256.

occurred, either from accident or disease, the consequent pressure on the spinal cord has been immediately fatal. Slight compression of the cord or its membranes, or the consequences of such inflammation as may be produced by that pressure or by the disease of the bone, are probably the causes of the paraplegia, or other partial paralysis, which occasionally takes place. In his first observations on the subject, Rust gives a very unfavourable opinion of the probable termination of the complaint. He says that it had been fatal in all the cases under his observation, and he makes it a question whether it admits of cure *. He mentions, however, in his treatise on diseases of the joints, that nature has effected a cure in some instances †, and he cites the case of a patient who was under his care in the Vienna General Hospital with a stiff neck and head, and obliquity of the latter; in other respects he was in good health. He found a motionless state of the three first vertebræ with exuberant bony deposition, and the history of the case left no doubt that it was a spontaneous luxation of the head.

Reil saw three instances, in which the upper vertebræ of the neck swelled suddenly with pain and fever, the head was bent backwards, degluti-

* Medicinisch-Chirurgische Zeitung, 1813, V. III. pp. 108, 109.

† Arthro-Kakologie, § 118.

tion painful and difficult. In fourteen days the swelling and fever lessened, but the head remained aside and limited in its motions, as he concluded from anchylosis*.

The cases of perfect anchylosis afford the clearest proof that the affection admits of cure, and the considerable number of such instances shews that the prognosis cannot be very unfavourable.

In the museum of St. Bartholomew's Hospital, there is a head dug out of a churchyard, with a dislocated atlas firmly anchylosed to it. The latter bone has been partially displaced towards the left, and at the same time a little twisted, so as to be placed obliquely in its new position. Its right side intercepts about one-third of the vertebral canal. Both occipital condyles are completely anchylosed to the atlas, the union extending also a little towards the front. The bony junction, which seems to be of very old date, is so perfect that the limits of the bones are not visible. The anterior arch of the atlas is situated lower than in the natural state, the space between it and the foramen magnum being at least half an inch.

Sandifort† describes six specimens, belonging

* Fieber-lehre, V. II. p. 356.

† Mus. . . Anatomicum Academiæ Lugduno-Batavæ, Vol. I. p. 149 . . . V.

to the anatomical collection at Leyden, of anchylosis between the occiput and atlas. In some the latter bone was partially displaced. The anchylosis embraced one condyle, or both, or even included, in addition, a part either of the anterior or posterior bony arch of the atlas, or one or both transverse processes. In two instances there was a considerable deposition of bony matter about the anchylosed parts.

Wynpersse had seen six specimens of anchylosis between one or both occipital condyles and the occiput; and he has given an engraving of one *. Boyer met with one at La Charité †. In other cases there is not only dislocation of the occiput upon the atlas, but also of the latter upon the second vertebra, with anchylosis.

Daubenton mentions a remarkable instance, which is probably of this kind, though he does not expressly state that the occiput had been displaced. It is a specimen contained in the cabinet of the Jardin des Plantes. "The second vertebra of the neck has been displaced, and pushed so far back, that there remains an interval of three lines only between the dentiform process and the posterior arch of the atlas; the second vertebra is at the same time inclined towards the right. We

* Dissertatio Medica de Ancylosi, § 21, Tab. I, Fig. 1.

† Traité des Mal. Chirurg. Tom. IV. p. 105.

can easily conceive how such a dislocation might occur; but, when the vertebral canal has been so considerably contracted, and the spinal marrow consequently so powerfully compressed, it is surprising that the patient should have lived long enough for anchylosis to be effected."*

Sandifort has described and delineated a specimen in which the atlas and axis have been displaced, the former to the right, the latter to the left, and they have become anchylosed to each other and to the occiput. The change of situation in these bones has lessened the dimensions of the vertebral canal, which measures transversely only half an inch instead of an inch †.

The most extensive occurrence of anchylosis is however seen in another specimen, in which the occiput, all the cervical, and the two upper dorsal vertebræ are firmly consolidated, the head being strongly twisted to the right, so that the left side of the alveolar arch corresponds to the middle of the bodies of the vertebræ. The parts anchylosed in this remarkable specimen are the occipital condyles and front of the foramen magnum to the atlas; the latter to the dentiform process, that process to the occiput; the articular processes and the laminæ of all the enumerated vertebræ. The

* Hist. Natur. Générale et Particulière avec la Description du Cabinet du Roi, Tome III. p. 99.

† Museum Anatomicum, p. 148, Tab. XV. Fig. 4.

bodies of the vertebræ were still connected by their fibro-cartilages*. Wynpersse has an instance of luxated atlas and axis, with anchylosis of those bones to each other and to the occiput †.

There is a remarkable case in Reil's Archives, of a patient sixty years old, who had for many years laboured under gout, and whose head was so bent towards the right side, that it was necessary to place a cushion between it and the shoulder. He died of apoplexy, and was examined. The atlas was placed obliquely, and rather thrown forwards, while the axis was pushed so much backwards, that the dentiform process projected into the middle of the foramen magnum, and the vertebral canal was diminished by one half. Although there had been no paralytic affection, it is added that the spinal cord was powerfully compressed ‡.

A preparation in the anatomical collection at St. Bartholomew's, exemplifies anchylosis of the occipital condyles and atlas, of the left transverse process of the atlas and occiput, and of the

* Museum Anatomicum, p. 147, Tab. XV. Fig. 1, 2, 3.

Wynpersse shortly mentions an instance in which the occiput and the six upper cervical vertebræ were anchylosed together. De Ancylosi, p. 21.

† De Ancylosi, p. 19, Tab. I. Fig. 2 and 3.

‡ Archiv. für die Physiologie, Vol. IV. p. 407.

articular processes of the second and third vertebræ.

Anchylosis of the dentiform process and atlas is not so frequent an occurrence as that of the occipital condyles. In the collection just mentioned there is a specimen of complete bony anchylosis, between the anterior arch of the atlas and the dentiform process. The occipital condyles are here nearly flattened, so that they probably executed some degree of lateral movement upon the atlas. A curious example of this anchylosis is described and figured by Wynpersse. The dentiform process is united to the atlas, and the articular processes and bodies of the two vertebræ are also anchylosed. A leaden bullet was lodged in the left transverse process of the atlas, which is formed into a rounded bony cyst, firmly containing the foreign body, and constituting an unnatural prominence on the front of the vertebra.

The principles of treatment applicable to these cases, in the commencement and during the progress of disease, are the same which guide our conduct, when disease is seated in other parts of the vertebral column. The immediate vicinity of so many important organs renders it a matter of great consequence to lessen the degree and extent of inflammation, and thus to limit the disorder in its early stage to the parts first attacked. The

local abstraction of blood, with the other parts of the antiphlogistic plan, and perfect rest of the affected bones should be persevered in until all symptoms of active mischief are removed. Counter irritation in its various shapes, and more particularly by the moxa, seton, or issue, will contribute essentially to assist the subsequent restorative process.

ON

THE TREATMENT

OF

NÆVI MATERNI

BY LIGATURE.

BY

W. LAWRENCE, F.R.S.

SURGEON TO ST. BARTHOLOMEW'S HOSPITAL, ETC.

Read May 8, 1827.

WHEN Nævi Materni* are of considerable mag-

* The nature of the affections, to which the following observations refer, is not yet clearly ascertained, and some confusion exists in respect to their nomenclature. The conspicuous congenital malformations, in which the colour, texture, or thickness, the visible blood-vessels, or the hairy growth of the skin, deviate from their natural state, are called *nævi materni*, to which name the expressions, *congenitæ notæ*, *mother spots*, and *muttermahle* or *mutterflecken*, in German, are synonymous. These marks frequently remain unaltered through life, and require no surgical treatment. In other cases, when the skin has exhibited at the time of birth, or soon after it, a red, purple, or livid stain, a peculiar vascular growth is subsequently developed, either in the cutaneous texture or under it, and generally increases rapidly: perhaps indeed the vascular growth, as well as the cutaneous stain, which seems to be its germ, may sometimes be congenital. The term nævus mater-

nitude, or dangerously situated, none of the ordinary modes of treatment can be considered as at

nus, as used by English writers, includes not only the visible malformations of the skin, but also the vascular tumours which are afterwards developed under them, and which indeed are so far independent of the former, that they may occur where the texture of the skin is quite natural; while foreign authors, and particularly the French, give the name of nævus only to the marks of the skin. Baron Boyer speaks of these under the terms nævi, genitivæ notæ, envies, taches de naissance; "Traité des Mal. Chir. tom. II. p. 338;" and gives to the vascular growths the name of *tumeurs variqueuses*, or *fongueuses sanguines*, distinguishing them, according to the æra of their developement, into *congénitales* and *accidentelles*, "Ibid. Chap. I. Art. 8." Baron Dupuytren, struck by the analogy, which their structure and phænomena offer to those of the erectile tissues, has called them *tumeurs erectiles*; "Dict. des Sciences Medicales, tom. XX. p. 201." The latter term is adopted by Mr. Breschet, who in the article *nævus* of the Dict. de Médecine, does not enter into the consideration of those growths. They are called by Graefe *Telangiektasies*; "Angiektasie, Leipsic, 1808, 4to." and by Alibert, *Hæmatoncus*, from αἷμα, blood, and ὄγκος, tumour; "Nosologie Naturelle, tom. I. p. 334." They have sometimes been called by the Germans, *Blutschwamm*, literally blood-sponge; Chelius, "Handbuch der Chirurgie, Leip. 1826; v. I. § 1282." and they are obviously included by Mr. John Bell in the description of what he calls *aneurysm by anastomosis*, though I must observe that the vascular tumours, which I have seen, either existing at the time of birth, or developed under congenital stains of the skin, have not pulsated.

The French and Germans have again confounded these growths with the disease recently described by the English, under the name of Fungus Hæmatodes. See the excellent article "Hématode", in the Dict. des Sciences Médicales, where Dr. Breschet has pointed out the mistake, and shewn the sense in which the somewhat inappropriate term of fungus hæmatodes has been used by the English writers. See also the Handbuch of Chelius, at the place

once safe and effectual. Although excision, which has been principally relied on, deserves the latter character, it is in many cases dangerous. The profuse bleeding attendant on the removal by the knife of even small nævi, is often alarming, and certainly dangerous in the young patients who are the most frequent subjects of the operation. When the morbid growth itself is cut, a powerful gush of arterial blood takes place, which can hardly be restrained, and is not explicable by any thing hitherto ascertained respecting the nature of these structures.

Even when we keep clear of the tumour, we generally have very serious hemorrhage, so that in operating in some instances of nævi not very large, I have really been alarmed for the life of the patient, and the recovery of strength and colour has been very tedious. A case related by Mr. Wardrop, in a paper printed in the ninth volume of the

before quoted. Mr. Maunoir has noticed the misapprehension and confusion which have existed on this subject, in his "Mémoire sur les Fongus Médullaire and Hématode, Geneva, 1820;" and he proposes to give the latter name to the vascular tumours, and to designate the affection, which has been called fungus hæmatodes in England, by the name fungus medullaris. We need not be surprised that the appellation fungus hæmatodes has given rise to misapprehension; for under it are included affections, in which the formation of fungus, and the admixture of blood with the morbid growth, are not essential circumstances. This name would be altogether inappropriate to the vascular growths of congenital or subsequent origin, because they do not form fungus, either in their natural course, or even when wounded or irritated by escharotics.

Society's Transactions, shews that these fears are not imaginary. A child was born with a nævus on the back of the neck, resembling, in form and size, half an ordinary orange. When it was seen on the tenth day after birth, the skin had already given way, and copious hemorrhage had ensued. "Conceiving," says Mr. Wardrop, "the immediate extirpation of this tumour the only chance of saving the infant, I removed it as expeditiously as possible, and made the incision of the integuments beyond the boundary of the tumour; aware of the danger of hemorrhage where such tumours are cut into. So profuse however was the bleeding, that though the whole mass was easily removed by a few incisions, the child expired."* The event of this case will not surprise us when we find that blood issued most abundantly from the whole denuded surface, and that one vessel, of which the divided orifice was observed in the basis of the tumour, admitted a full-sized urethra bougie.

Having observed instances in which ulceration and sloughing had occurred spontaneously in these growths, destroying them in great part, and producing inflammation, by which what remained was consolidated and prevented from increasing, Mr. Wardrop was led to imitate this process by the application of kali purum to the part; and he has found the method successful in many instances of

* Ante, Vol. IX. p. 203.

small nævi*. It would probably be as dangerous as excision, though in a different way, in those of larger size†.

I have only used the caustic on one occasion, when it was partially successful, arresting the progress of the morbid growth, but not removing the unnatural prominence and discolouration. It was a case of nævus on the lower part of the leg in a child about two years old, seated in the skin, and closely resembling in its deep tint, the colour of the ripe black currant. It consisted of two longitudinal portions, about one inch and a half long, and a quarter of an inch broad, projecting slightly above the general surface, and irregular both in breadth and degree of prominence. There were two or three merely superficial stains in the interval between these portions. The surface had been sometimes accidentally broken, with slight bleeding, and subsequent incrustation. I rubbed the two longitudinal portions freely with kali purum; hemorrhage was produced, but ceased spontaneously. Inflammation and discharge from the surface followed, but, at the end of a few weeks, the part appeared exactly in its original state. A

* Ante, Vol. IX. p. 213. Two cases treated in this manner by Mr. Wardrop are reported in the Lancet, Vol. XI. p. 653.

† A case, in which caustic potash had been applied to one of these tumours situated on the chest, ended fatally under the observation of Baron Boyer. Traité des Mal. Chir. Tom. II. p. 314.

much freer application of the caustic was now made; the surface was broken at many points, and the kali purum was well rubbed into those parts. Considerable inflammation and deep ulceration ensued. The external appearance, after the lapse of a month, was nearly the same as at first. The discoloured part however has become quite firm; it does not grow, nor does it bleed or discharge from slight injury, as before.

Cold applications and pressure* are in the ma-

* The treatment by pressure, which has been recommended in this country by Mr. Abernethy (Surgical Works, Vol. II.), has been employed in many instances by Baron Boyer, who points out the circumstances under which it may be expected to succeed. Having been consulted in the case of a child two years old, who had a nævus in the upper lip, extending to the septum nasi, so that it could not have been completely extirpated, he advised the mother to moisten it frequently with a solution of alum, and to compress it as much as possible with her finger, without expecting that much benefit would result from his advice. The plan however was very assiduously followed up by the mother, who often maintained pressure on the swelling for several hours together. Her perseverance was rewarded with complete success, and no trace of the swelling remained when the patient was seen by Boyer at the age of twelve. He says that he has since cured, by means of compression, many tumours of the same species, situated on the head, and one on the root of the nose and eye-brow; but that, in order to ensure the success of this plan, a solid point of support is necessary, while the compression must be permanent, must act on the entire surface of the tumour, and must be continued long enough to obliterate the cells of the spongy texture, and the vessels which pour their blood into those

jority of instances inefficacious, or inapplicable. They deserve the latter character more especially in infants, and in reference to the most frequent seat of the affection, namely, the face.

The proceeding, suggested by Mr. Wardrop, of tying the arterial trunk or trunks that supply the tumour, can be applicable to very few instances only. The formidable and almost hopeless state of the disease, and the early age of the patient, in whom he tied the carotid artery for a large nævus on the side of the face and head, sufficiently account for the fatal event. Perhaps the free communications between the several arteries of the head may render the carotid an unfavourable ves-

cells. Traité des Maladies Chirurgicales, Tom. II. p. 303 and 304.

Baron Boyer observes further, that compression may also prevent the development of these swellings, and remove the congenital mark, which is their precursor, when it is favourably situated. He has seen several instances, one of his grand-daughters being among the number. She was born with a small bright red mark on the right temple. It soon increased, so as to render its nature very obvious, and, at the age of two months, had become as large as the thumb nail of an adult, and had begun to project. A bandage, with a pad rather larger than the mark, was applied in the daytime only, for three years, and removed the affection so as to leave no fear of future growth. The only trace of it is a very narrow line of a light violet tint, corresponding to the circumference of the mark: this has continued in exactly the same state for the last four years. In the space circumscribed by this circular line the integuments are quite natural. Ibid. p. 310.

sel for the experiment. In another instance however, this plan has been completely successful; a report of the very interesting case, which does so much credit to the judicious boldness of the operator, will be found in the "Lancet." *

In a case which was lately submitted to my examination at St. Bartholomew's Hospital, I pointed out to the pupils that the size of the tumour rendered excision quite inadmissible, from the double risk of immediate death by bleeding, or of the not much slower fatal influence on a young infant, of so large a wound as would have been required for removing the tumour. I was considering the propriety of using the caustic, when Mr. Arnott informed me that he had seen the ligature employed in two instances by Mr. Anthony White; and

* "Case of Nævus on the Face successfully treated by tying the Carotid Artery; by J. Wardrop, Esq." Lancet, Vol. XII. p. 267.

The cases in which the carotid artery was successfully tied by Messrs. Travers and Dalrymple, were pulsating vascular tumours occurring in the adult, or, in other terms, aneurysms by anastomosis. Medico-Chirurgical Transactions, Vol. I. and VI.

The carotid artery has been tied, with partial success, by Baron Dupuytren, in an apparently analogous disease situated in the occiput and ear. Rust's Magazine, Vol. VII. p. 161. Professor Chelius, of Heidelberg, who quotes the latter case, observes, that "where the anastomoses are considerable, the ligature of the principal arterial trunk will not be sufficient. I have observed a very large vascular tumour (blutschwamm) on the knee, in which the ligature of the crural artery was performed without advantage, and it was necessary to amputate the thigh." Handbuch der Chirurgie, 2d Ed. Vol. I. p. 884.

that one of these at least had been successful. I have since found, what had escaped my recollection at the moment, that this proposal is noticed in Mr. Wardrop's paper.—"How far," says he, "it may be advisable in some cases to remove large subcutaneous nævi by ligature, I cannot from experience decide. Mr. White informed me that he thrust a needle through the middle of a very large subcutaneous nævus on a child's shoulder, and included each half of the swelling within the noose of a ligature. The operation was attended with complete success *.

The following cases will shew that the ligature employed in the mode pointed out by Mr. White, is not only equally efficacious with the knife, but much more safe, and that it possesses another important advantage, which I shall notice afterwards.

CASE I.

J. B. an infant four months old, was brought to St. Bartholomew's Hospital in February, 1827.

* Medico-Chir. Transactions, Vol. IX. p. 215. I find that the use of the ligature is mentioned by the late Mr. John Bell, but in such a manner as to leave it doubtful whether he had ever employed it. Speaking of nævi, he says, "the more protuberant of these tumours may be cut off by a ligature; those which are flatter, though protuberant, have yet a broader base, and may be killed by striking a needle through the base of the tumour, and tying the threads of the ligature on either side. The surest way is the knife", &c. &c.—Principles of Surgery; a new edition by Mr. C. Bell; Vol. III. p. 430.

At the time of birth, a slight reddish discolouration of the skin, as large as a sixpence, was observed at the upper part of the back; this red spot was not elevated. Having remained of the same size and in the same state for three months, it began to enlarge, became elevated above the surrounding sound skin, changed its colour from red to a dull purple, and frequently discharged blood from openings on its surface. It continued to grow rapidly until the time of admission, when it presented a circular tumour five inches and a half in circumference, and projecting about three quarters of an inch. Its surface was slightly irregular, of nearly uniform prominence, and a little depressed in the middle; it was rather larger at the edge than at the base, which rendered the application of the ligature easy. It was of the kind denominated by Mr. Wardrop, subcutaneous nævus. Although the skin had been distended and thus rendered thin by the growth of the tumour, it could be easily pinched up into folds on the surface, so that the disease was decidedly below the integuments. Its connexion to the muscles of the back was equally loose, and it could be moved from side to side with the greatest ease, or drawn up by the finger and thumb, and detached from the subjacent parts. It had a mottled appearance, being mostly of a dark livid colour. It was soft, and gave a sensation to the fingers like a collection of varicous vessels. Pressure diminished it considerably, and made it of lighter colour; it soon filled again. When the child cried

or strained, it became larger and of a deep purple tint.

On the 17th of February I tied the tumour, elevating it from the muscles of the back with one hand, while I passed a large curved needle under the middle of its basis with the other, carrying the point of the needle in and out again, close to the edge of the base of the swelling. When the needle had been cut out, the two ends of the ligature, which had been left of equal length, formed two distinct ligatures applicable to the immediate purpose of the operation. They were then tied, as tightly as they could be drawn, just in the line of distinction between the tumour and the sound skin. The firm pressure thus made on the base caused a cracking of the tumour at the surface, from which a few drops of arterial blood escaped before the ligature was quite tight. The infant seemed to suffer considerably when the ligatures were tied, the process being attended with considerable dragging and stretching of the surrounding skin, which was thrown into several large folds. A soft rag dipped in cold water was laid over the part, and occasionally moistened. For thirty-six hours the child was restless, crying almost incessantly and occasionally convulsed; at the end of that time it took the breast, which it had previously refused. An inconsiderable oozing of blood took place. On the 19th I sliced off the tumour, which had become almost black. The ligatures were quite loose on the 20th, and I re-

moved them. A large slough occupied the centre of the wound, extending deeply; it came away in a few days under the application of bread poultice. The wound then granulated and assumed a perfectly healthy appearance, all the unpleasant symptoms having subsided after the removal of the ligatures. The process of cicatrization was slow, but it was at last firmly completed; and the former situation of this large tumour is now denoted by a very slight scar.

The substance of the tumour, when it was sliced off on the 19th, was tolerably compact: its cut surface presented the sections of numerous blood-vessels, apparently venous, filled with coagulated blood: the largest were equal to an ordinary writing quill. These vessels were connected by a firm greyish substance, of a somewhat fibrous texture. There was no appearance of cells.

What is the nature of such vessels? The colour of the part during life, the size of the tubes, and the appearance of their coats lead us to suppose that they are veins. How then does it happen that the profuse bleeding, which takes place when the tumour is cut, is arterial? And how is it that the growth of such structures is arrested, and their absorption produced by tying the principal artery of the part*?

* In a letter which I received from Mr. Arnott, he made the following observations on the structure of these vascular tumours.

CASE II.

I was consulted respecting an infant, between four and five months old, who had a cutaneous

"When your paper was read, I observed that in the description of the structure of the tumour which was sliced off two days after you had put a ligature around it, you stated that it presented the section of numerous blood-vessels of large size, without any appearance of cells. You also asked what was the nature of such vessels? remarking that 'the colour of the part during life, the size of the tubes, and the appearance of their coats lead us to suppose that they are veins.' You then inquired 'How does it happen that the profuse bleeding, which takes place when the tumour is cut, is arterial?' Now, I would observe that although other pathologists have described tumours of this description as being composed of a multitude of cells, into which are distributed a great number of veins and arteries, yet from the examination of several specimens which have been extirpated, I am disposed to think that the appearance of cells may have arisen from a deception which the numerous communications of the vessels with each other produce. The nature of this deception will be best explained by the following extract from Cuvier's Anatomie Comparée, Vol. V. p. 70., where he is describing the structure of the corpus cavernosum penis, the structure of which these nævi in many respects resemble: 'Le sang ne s'épanche point, pendant l'érection, dans de véritables cellules, formant, comme on le dit, des cavités intermédiaires entre les veines et les artères. C'est un fait dont nous sommes bien convaincus par la dissection de la verge de l'éléphant. Le corps caverneux de cette énorme verge *est rempli en très-grande partie de vaisseaux veineux, qui ont entre eux de si larges et de fréquentes anastomoses, dont les parois se confondent et s'ouvrent si souvent pour ces nombreuses communications, qu'il en résulte, dans quelques endroits, une apparence celluleuse.*' Besides the anato-

nævus just below the left breast. A small red speck was observed soon after birth; it increased rather fast, and it had become, when I saw it, as large as half a crown. It occupied the texture of the skin, projecting about one quarter of an inch, having a finely granulated surface and a bright pink colour. I treated this in the same way as

mical structure, some of the phænomena of these subcutaneous nævi resemble those of the 'tissu erectile.' The size of the tumour is capable of alteration, they may be squeezed into a state of flaccidity, evidently arising from the absence of blood in the part, for, on the pressure being withdrawn, they fill again gradually but rapidly, and may be then said to be in a state of erection. The bleeding also, when the tumour is cut, being arterial, is only what likewise takes place when the erectile tissue in the organs of generation is divided."

I think that the structure of these nævi is more analogous to that of the corpus spongiosum urethræ than of the corpus cavernosum. The former, including the bulb and glans, is composed entirely of convoluted veins: this is distinctly visible in the common coarse injections of the human penis, but it is more obvious in some animals, as for instance in the bulb of the dog's penis. The injected corpus cavernosum does not present a similar appearance, and I have not been able to trace in it the venous structure, which is so obvious in the corpus spongiosum. I do not recollect having observed, in amputations of the penis, the circumstance mentioned by Mr. Arnott, that its erectile tissues contain arterial blood.

It appears to me that the existence of cells in these tumours, with arteries and veins opening into them, has not been ascertained by direct examination, and consequently that the notion hitherto rests on superficial observation, or mere supposition. The various comparisons of these productions to the human placenta, to the spleen, to the corpus cavernosum penis, and corpus spongiosum urethræ, and lastly, to the comb and wattles of the fowl tribe, shew that no accurate knowledge exists on the subject.

the other case. The application of the ligatures gave pain, and made the child cry considerably; but it soon became quiet, and no unpleasant symptoms occurred. At the end of forty-eight hours I cut off the dead part and removed the ligatures. The wound, being poulticed, soon became clean, and healed rapidly.

CASE III.

—— Hacker, a child fourteen months old, and still at the breast, was brought to me at St. Bartholomew's Hospital, from a street in the City Road, with a subcutaneous nævus below the inferior angle of the right scapula. It was a fortnight after birth when the mother first observed a small spot, like a stain of the skin, in this situation. In six months it had become much more conspicuous, being of a bluish red and slightly raised, and it has increased rapidly for the last two months. It now forms a soft compressible tumour, two inches in diameter, of which the central part, equal in size to a half crown, is the most prominent, being raised about half an inch above the general surface of the swelling. This raised part has a livid marble appearance, the skin being here closely adherent to the subjacent vascular mass, and indeed identified with it, while the surrounding integument is natural, and can be pinched up from the swelling. The latter, which has a doughy feel, and seems composed of a vascular plexus, is diminished by pressure, and then slowly regains its former size. Its connexions to the parts be-

neath are loose, so that it can be completely drawn up from them.

The successful result of the two former cases determined me to employ the ligature here, as excision would have been formidable from the length of the necessary incisions, and the extent of denuded surface, and even dangerous from the copious bleeding that might have been expected. The use of the ligature did not seem to me, however, free from danger, as it would be necessary to apply it in the sound skin, and to include a circle of more than two inches in diameter. I used the double ligature in the way already described on the 19th May, drawing the knots as tightly as I could, in order to destroy immediately the included mass. The child, which had been taken home to the City Road from the hospital, was fretful and restless, and a little feverish on the following day; but she had slept and taken the breast tolerably well.

On the 21st she was brought to St. Bartholomew's, when I found the tumour quite black, without any surrounding inflammation. I cut off the principal portion of it with a scalpel, and removed the ligatures, on which the folds of the skin produced by their application immediately disappeared. Active aperient medicine was ordered, as the bowels had not been open since the operation, and a bread poultice was directed to the part. The removed portion was firm, and presented in a section a dark

colour, like that of black currant jelly. When closely examined, it was found to be made up entirely of divided vessels, filled with coagulated blood.

23d. The mother stated that the child cheered up immediately after the ligatures were removed; the bowels were soon freely opened; she is now perfectly well, and the aspect of the wound quite healthy.

24th. The remainder of the mortified part has separated, leaving a clean and healthy granulating surface.

21st July. The cicatrix is not yet quite complete; but not a vestige of the morbid structure remains.

CASE IV.

Sarah Humphries, a very healthy child, nearly six months old, had at the time of birth, a small stain-like speck on the skin, but little discoloured, and not elevated, below the right eye. In a few days it became of a purplish red tint; and in a month or six weeks it was evidently increasing, and rose above the level of the skin. At the end of three months it had attained the size of a hazel nut, and it is now equal to a large walnut. The middle of the tumour forms a light purple circular elevation of the skin, equal in diameter to a shilling, about an inch below the edge of the lower eyelid; its basis is much larger, extending under the sound skin, and making the entire cheek much more pro-

minent than the opposite. The base is not clearly defined; yet the swelling can be elevated from the subjacent parts. It is soft, and can be lessened by pressure, which renders the colour of the central prominence fainter.

On the child's back, near the spine of the left scapula, is another swelling, as large as a pigeon's egg, situated under the skin and adipous membrane, which are perfectly natural, being loose over the swelling, so that they can be pinched into a large fold. It is free from pain, and disappears almost entirely on pressure, slowly reappearing when the pressure is removed. From these circumstances it is considered to be a vascular growth, similar in character to that on the face. It is nearly three months since this swelling was first noticed: it was then very small, but has gradually enlarged.

The active growth of the nævus on the cheek required that some means of checking it should be immediately resorted to, while the magnitude of the swelling, the indefinite extent of its basis, and the neighbourhood of the lower eyelid, formed strong objections to excision; I therefore determined to adopt the plan of tying.

June 27th.—A needle with a double ligature was passed through the basis of the nævus, in the

perpendicular direction, which appeared preferable to the horizontal, as being less likely to disturb the lower eyelid. The ligatures were tied on each side, so that each included half of the tumour. When the outer ligature had been fastened, it was observed that it did not include the whole of the discoloured skin, a small and extremely narrow slip was beyond the circle of the thread. Arterial blood flowed from the track of the needle; but it stopped when both ligatures had been tightened. The cheek was covered with a soft rag, dipped in cold water, and kept constantly damp.

28th.—Redness and swelling of the cheek, eye, and upper lip; the latter circumstance prevents the child from sucking. She is hot and feverish. She was very fretful for several hours after the operation, and would not take the breast. Some syrup of poppies was given to quiet her at night; she then got a little rest. She has been very ill all the morning, and breathes with difficulty. The bowels have not been opened. The tumour is now pale white, and smaller than before the operation.

Intending to remove the ligatures at the end of twenty-four hours, I cut through the outer one, when the whole tumour became immediately distended with blood, regaining its original size and purple colour. A few drops of blood flowed down the cheek. Of course I did not remove the other

ligature. Three grains of Calomel to be taken directly, and a tea-spoonful of Castor-oil in three hours; to be repeated, if necessary.

29th.—The surface of the tumour is mortified, and of a dark-black colour. The redness and swelling are considerably diminished. The bowels have been freely relieved, and the skin is cool. The inner ligature was cut away.

July 1st.—The cure proceeds favourably in all respects, the irritation and pain being less than could be expected. As the slough is dry and hard a poultice is ordered.

July 3d.—The slough came away this morning, leaving a tolerably healthy ulcer, of the size of a crown piece.

5th.—She is pale and peevish to-day, with impaired appetite and rest; the stools are green and slimy. In the centre of the ulcer are two or three large prominent granulations, of a livid red colour; the others are pale, flabby, and less elevated. Occasionally there is a slight discharge of blood from the surface. Five grains of the Hydrarg. cum Cretâ every night. The livid granulations to be touched with the nitrate of silver.

14th.—The Nitrate of Silver has been applied freely three or four times. The sore and the health

are much improved, and the former is cicatrizing rapidly: it no longer bleeds, but secretes very healthy pus. The livid points of doubtful character still remain in the centre. The Nitrate of Silver to be freely applied to the livid parts every other day, and the bread poultice continued.

23d.—The sore is considerably diminished, being now reduced to the three prominent masses before described. The small portion of purple skin, not included in the ligature, is rather broader than it appeared when the ligature was removed, and has the bright tint of the original tumour. The Nitrate of Silver was well rubbed on it to-day, and on the rest of the sore.

25th.—The purple portion of skin has been destroyed by the caustic, and cicatrization is proceeding favourably*.

The superior safety of the ligature, in reference to the danger of hemorrhage, is rendered obvious by these cases. In the first I would not have performed excision, feeling satisfied that immediate death from bleeding would have been inevitable. There would have been less risk in leaving the case to nature. But, supposing this danger to

* The sore soon healed, but with some appearance of remaining disease: this has become more considerable, so that at the time this sheet is passing through the press, it is doubtful whether another operation will not be necessary.

have been surmounted, the patient would have been in a much more dangerous state with the great wound of excision, than with the comparatively small breach of surface caused by the ligature. It would have been necessary to make an elliptical incision, with each side at least four inches long. The ligature is applied close to the base of the tumour, while it would be necessary, in order to clear the diseased part, to keep half an inch from it with the knife. This is an important advantage on the side of the ligature in the numerous instances where extensive loss of skin would cause deformity.

The knife might have been safely used in the second case; but the operation would have been serious, and the loss of blood considerable; while, with the ligature, the latter was entirely avoided, and no symptom of the smallest consequence occurred.

The treatment by excision in the third case, would have involved the necessity of a very large wound, and the risk of fatal hemorrhage. The latter danger would have equally attended the same practice in the fourth instance; a large wound would have been required, running very near to the edge of the lower eyelid, with a great probability of eversion on the contraction of the cicatrix.

Our object, in this mode of treatment, is to in-

tercept the circulation completely in the tied part, and thus to deprive it of vitality as speedily as possible. The ligatures must be drawn very tightly, and ought therefore to be so strong as to bear the utmost force we can employ with the fingers and thumbs without breaking. Stout silk-twist will answer the purpose; but we should observe the precaution of trying its strength previously. As it is necessary, in some instances, to include a large bulk of parts, their complete strangulation is not easily effected, however strong the ligature may be. Perhaps it might be advisable, under such circumstances, to adopt the proceeding recommended by Mr. Mayor * of Lausanne.

As the continued pressure of the ligatures keeps up irritation in the parts immediately constricted, and in those around, which are forcibly dragged together and puckered, it is desirable to remove them as soon as we can be certain that the objects of their application are accomplished, namely, coagulation of the blood in the vessels composing

* In a work entitled, "Essai sur les Ligatures en Masse, 8vo, Paris, 1826," this gentleman, who is surgeon to the hospital of the Canton de Vaud, recommends a method, by which ligatures placed round thick or firm substances, may be tightened to any degree that may be desired, and firmly fixed in that state. He uses a small instrument like some kinds of tourniquet, fixing the ends of the ligature to a cylinder which turns on its axis, and which is held in any position, to which it may be brought, by a small spring and rack.

the tumour, and death of the part. The foregoing cases prove that these purposes are fully effected in forty-eight hours, while the fourth shews that we cannot safely trust to a compression of one half that duration. The danger of inflammation or irritation is at an end as soon as the ligature is taken away, and the relief to the patient from its removal is very obvious.

OBSERVATIONS

ON THE

SURGICAL TREATMENT

OF

THE NÆVUS MATERNUS,

WITH LIGATURE,

BY ANTHONY WHITE, Esq.

SURGEON TO THE WESTMINSTER HOSPITAL.

COMMUNICATED BY

WILLIAM LAWRENCE, Esq.

Read June 12, 1827.

IT has been my practice during many years to destroy the larger specimens of nævi by strangulation with the ligature: a curved needle is passed under their base, and a single or double ligature used, according to the magnitude, figure, and situation of the tumour; and I recollect one example, in the destruction of which, it was necessary to pass four ligatures in order to entangle the whole of the spurious structure, on account of its irregular form and diffused surface, situate behind

the ear and extending down the neck of a very young infant. An assistant should raise the tumour with as much of surrounding skin in which it grows as possible, and thus enable the operator to pass the needle sufficiently deep, and at the same time include with his knot a portion of the healthy integument.

When the nævus is not large, a needle of sufficient length being carried under the centre of its base and the structure elevated upon it, a single ligature passed behind the needle, and firmly tied with a double noose, will be sufficient to destroy the organization. Where, however, the size of the tumour renders its strangulation by this mode doubtful, the needle should be armed with a double ligature to enable the operator to tie one half with each. This, in every instance where the whole substance has been included, has uniformly destroyed the structure, leaving, on its separation, a healthy granulating surface. There are some instances however, and some situations, where it is impossible to include the whole of the tumour with the ligature; but generally, in such cases, the inflammation excited by its application in the neighbouring parts is sufficient to obliterate, by condensation of the surrounding cellular structure, any remaining portion of the nævus.

I have met with but one instance of a partial recurrence of the disease, but which I had antici-

pated. The history of the case is detailed hereafter.

Excision having been attended with alarming hæmorrhage in many instances, as I have witnessed formerly, and fatal bleedings having, as I have been informed since, occurred in more instances than one, it is to be regretted that the treatment of nævi by strangulation should not have been generally adopted, for, until lately, I was not aware that it was not the ordinary practice of surgeons so to treat this highly vascular and formidable production. The following cases are detailed as examples of the practice.

CASE I.

In the early part of last winter, a boy about five months old was brought to me from Lambeth, having a nævus situated over the scapula. It was described as having been exceedingly small at the birth of the child, that it had very gradually increased during the first three months, but that latterly it had grown remarkably fast. It was nearly the size of a large walnut, and could be raised considerably by dragging it upwards with the fingers. I considered this example of the tumour to be too large to risk an operation by excision, and too small to require the application of a double ligature. I therefore passed a large curved needle under its base, a single noose formed in a strong

ligature, was then carried over each extremity of the needle, and this being tightened by a firm double knot, the needle was pushed through and withdrawn; no bleeding occurred, and in a few days the strangulated mass was detached and the wound soon healed.

CASE II.

In the autumn of last year, a boy under eight months old was received as my patient into the Westminster Hospital, having an enlargement of the thigh. He had at the same time two nævi, one immediately below the occiput on the neck, the other on the skin of the right side, a little below the axilla. The former was of considerable magnitude, being as large as the half of a full grown orange: the other much smaller. A large curved needle carrying two strong ligatures was passed deep under the substance of the nævus situated upon the neck, and each ligature made to include one half of the tumour. On or about the fourth day, a little hæmorrhage took place from some uncertain point where ulceration was proceeding; another thick ligature was therefore passed around the tumour without detaching the original, and by tying this firmly further hæmorrhage was prevented. The dead mass was entirely detached in ten days, and the ulcer healed rapidly.

CASE III.

A little girl five months old became my patient at the Westminster Hospital early in January last, having an irregularly formed nævus occupying a considerable portion of the skin of the throat, extending from under the chin, over the larynx, and upon the trachea, and almost entirely across the fore part of the neck. From the flaccidity of the skin the greater portion of the tumour appeared capable of being included with a double ligature; it was found impossible however to inclose a small portion seated deeply under the angle of the lower jaw, which was consequently left untied, but with the hope that the consequent inflammation would obliterate it. The strangulated portions soon sloughed away, and the sore healed favourably. Until within the last fortnight, no increase of the portion left had taken place. The child, however, has recently been attacked with catarrh and violent spasmodic cough; since which, there has been evident enlargement, and it is my intention to renew the operation on the remaining portion.

These examples of the practice are sufficient to shew its utility and its advantages over that by the knife.

Nævi appear to possess two modes of existence; the one active, the other stationary and passive;

the latter being generally known by the vulgar appellation of strawberries, raspberries, red currants, &c. and the notion yet holds, that when the above fruits are ripening, or becoming red, so in the same degree do the appearances on the surface of the nævi change, and become more florid. I need scarcely add, that the mother, during her pregnancy in the winter months, was tormented with a longing for these yet unborn fruits, which is still thought to engender mischievous, and not unfrequently fatal impressions, on the unborn offspring. The other variety of nævus, and which forms the subject of medical interference, is not unfrequently a tumour of considerable magnitude, but also possessing a very formidable character, and has been denominated "aneurism by anastomosis." It is a congeries of large blood-vessels, having the structure of veins rather than of arteries, not having any perceptible arterial action in themselves, and very like the bulbous-formed veins of the spleen. Indeed, I have seen some varieties to resemble very much the general appearance and structure of the spleen. This cluster of spurious vessels, when compressed, becomes slowly emptied, but it is difficult to reconcile into what surrounding vessels the blood regurgitates. The examination of the structure of this species of tumour, without previous injection, is very unsatisfactory; and as an opportunity of investigating their mode of organization on the dead subject with such advantage has not occurred, I am yet unable to at-

tempt a description. During the operation for the removal of the smaller specimens with the knife, the blood does not appear to be derived from any one large vessel or vessels, but from the entire divided surface of the integuments and subjacent parts, which pressure, rather than ligature, is necessary to control.

It was stated in Case III. that a partial failure at obliteration had happened in consequence of the difficulty of including a portion of the nævus, situated under the chin and angle of the lower jaw. With the kind and useful assistance of my friend, Mr. Arnott, the operation has been repeated, and with complete success. Two other cases have been similarly treated during the last month, both of which have also perfectly recovered.

Parliament Street, Aug. 27th, 1827.

ON THE USE

OF

THE SULPHATE OF COPPER

IN

CHRONIC DIARRHŒA.

BY

JOHN ELLIOTSON, M.D. CANTAB.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, AND PHYSICIAN TO ST. THOMAS'S HOSPITAL.

Read April 10, 1827.

ON Thursday, October 13th, 1824, I admitted into St. Thomas's Hospital, an Irishman, named Garret Welsh, twenty-four years of age, who had been labouring under diarrhœa for three months.

The abdomen was tender on pressure, the pulse quick, the skin hot, and the tongue foul and dry. The motions were yellowish and watery. I ordered a very large blister to be applied over the abdomen, half a grain of Opium to be taken night and morning, with chalk mixture, and the diet to consist of milk.

In a few days the tenderness was much diminished, but the diarrhœa continued. Powdered Catechu was added to the mixture, and taken every six hours, and the blister was repeated, but without good effect. Infusion of galls was now made the vehicle of the Catechu, and instead of the solid Opium, taken latterly in the dose of one grain, night and morning, fʒj of the tincture was given in such astringent draught, a third blister was applied, and as considerable debility and emaciation had taken place, animal diet was substituted for the milk.

The 30th of November had now arrived, and though there was no pain or tenderness, the diarrhœa was as profuse as ever, and the man appeared likely to sink. Mr. Henry South, one of the pupils, mentioned to me that two cases of the successful exhibition of Sulphate of Copper and Opium in diarrhœa, had recently been related in the Physical Society of Guy's Hospital, and I instantly resolved to profit by his information, and prescribed half a grain of the Sulphate of Copper twice a-day, with two grains of Opium, so that the quantity of the latter might be much the same as what had previously been taken in the twenty-four hours. In a few days the disease was evidently less severe, and in eleven from the commencement of the use of the Copper, was so much abated, and the man's appearance and strength so much improved, that I ventured to diminish the Opium to one grain, in-

creasing, however, the dose of the Copper to one grain, lest the disease should gain ground again, and that I might fully satisfy myself which of the remedies had the greater share in producing the benefit. In a week more the disease had so diminished that I ventured to omit the Opium; and in another the man felt so strong, and found his disease so inconsiderable, that he would stay no longer in the Hospital, and was made an out-patient.

This case made a great impression upon me, because two powerful astringents in common use, combined with Opium, had previously failed, and the benefit clearly arose from the Sulphate of Copper, and not from the Opium, which I exhibited with it solely for the purpose of preventing the acrid quality of the salt from counteracting its astringent effects upon the intestines.

On December 8th, 1825, I admitted a sailor, named Peter Hurly, aged 48, who had been affected many weeks with the form of diarrhœa so accurately described by Dr. Baillie, in the fifth volume of the Transactions of the College of Physicians. The description is preceded by the remark, that it "is not very generally known, and is almost constantly fatal." Dr. Baillie states, that it occurs more frequently in men than in women, and generally in persons who have long resided in hot climates; that the stools are very copious and numerous,

pale, like a mixture of water and lime, frothy, and often of a sour smell; but if they acquire the consistence of pudding, they are still pale; and if they become figured and dark, the colour is rarely so deep as in health, and they soon again become white and frothy; that the body is thin, and the countenance sallow; that there is no tumefaction or pain of the abdomen; and that though the disease may continue several years, and be occasionally less severe, it almost constantly in the end exhausts the constitution.

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The present patient was a *man*, and had lived much in *hot* climates; was *thin* and *sallow*, and had gradually lost his flesh and strength; his motions very frequent and *copious*; liquid, *white* and *frothy*: he had *no swelling* of the abdomen, *nor tormina*, *nor pain upon pressure*.

I ordered half a grain of Sulphate of Copper, with one grain of Opium, to be taken twice a-day; and his diet to consist of milk, arrow root, strong beef-tea, and a little wine. In four days the dose was increased to one grain. He had not taken this quantity above five days before the stools were reduced to two or three in the twenty-four hours, and they were never afterwards more numerous, except for one day, probably from some accidental circumstance. In a few more days they became thicker, and from that time there was generally but one in the twenty-four hours. On the 3d of

January, rather less than four weeks from his admission, they assumed a deep healthy yellow—an occurrence rarely, if ever, witnessed by Dr. Baillie,—and they continued of this colour. They however became liquid again, and I augmented the dose to one grain and a half; and this not rendering them consistent, I augmented the dose after eleven days to two grains. Some pain was now felt in the epigastrium, and a blister was applied without benefit; and as it appeared to arise from the acrimony of the salt, the dose of Opium was made gr. iss, with the effect of removing it entirely. The man found himself so strong that he desired to be discharged on the 2d of February. He had gained flesh, and now passed but one motion in the twenty-four hours, solid, and of a healthy appearance. He took with him a supply of medicines for a fortnight.

This case is particularly satisfactory when compared with Dr. Baillie's experience. "The influence of medicine," he says, "is generally very inconsiderable. Patients will sometimes receive advantage from very small doses of mercury, which will sometimes stimulate their liver to a better and more plentiful secretion of bile, without impairing the strength of their constitution. Some advantage too is occasionally derived from the different kinds of bitter medicines, as cascarilla, cusparia, &c. combined with a few drops of laudanum. A medicine

of this kind, taken twice a-day, will sometimes improve the digestion, when it is deficient, will render the motions more solid and less frequent, and increase the strength of the constitution: but this good effect is hardly ever permanent, for the patients almost constantly fall back into the state of frequent and frothy stools. The repeated returns of the complaint at length wear out the constitution, and the patients sink."

The stools of this man became highly bilious, without the exhibition of a grain of mercury, and acquired not only a biliousness, but a consistence never, I should imagine, witnessed by Dr. Baillie; and this permanently. His strength and flesh were restored, and not by general tonics, but by the removal of the disease.

Although the Opium must have been useful, the great benefit cannot be ascribed to it, because Dr. Baillie gave Opium with such results as we have seen, and because the stools did not become consistent till the dose of the Copper was increased.

The following case is one of dysenteric diarrhœa.

John Roberts, aged 39, was admitted April 14th, 1826.—He had been frequently in North America, but in England ever since October. He had laboured for three months under severe purging, the

stools being bloody, and amounting to about twelve in the day and night, with tormina and tenesmus. At present the stools were generally thin and yellow, though often bloody and slimy.

I ordered him one grain of Sulphate of Copper, and one grain of Opium, twice a-day. The day after his admission the stools were reduced to five. In three days more they had increased to seven or eight. The medicines were therefore given three times a-day; and there being no amendment at the end of a week, the dose of the Copper was increased to one grain and a half; in another week to two grains; and in three days more (now three weeks since his admission), to two grains and a half, as the stools varied from six to nine in the twenty-four hours, and were frequently liquid; though a sufficient quantity of solid healthy fæces was daily discharged; he had experienced no tormina nor tenesmus since his admission, had grown strong, and gained flesh. In ten days the dose was raised to three grains, the Opium remaining all along at the original quantity. In a week from this period the stools were reduced to three, and in a few days more one only was passed in the twenty-four hours.

He left the Hospital June 1st, with a supply of medicine, perfectly well and grown fat, though he had taken only the house allowance of meat every other day, and table beer.

Notwithstanding his stools had been generally bloody and slimy for three months previous to his admission, they were never so during his stay, nor did he ever experience the tenesmus, and but once the tormina.

The following was a case of long and severe diarrhœa.

A Swede, named John Nelson, aged thirty-six, was admitted January 19, 1825. He had been left by his ship, with eight others, on a desolate island in the Indian Ocean, where he remained four years and three months; then went to the Isle of France, and was attacked with dysentery, which ceased at the Cape, and returned at Amsterdam. He had now suffered from diarrhœa six months. The motions amounted to twelve in the day and night, were yellow, and attended with pain and scalding.

The Sulphate of Copper was prescribed in the quantity of one grain, with one grain of opium twice a-day. The dose was augmented to one grain and a half, and subsequently to two grains; and at length one grain and a half, with but half a grain of opium, was given three times a-day. From this time the motions were less copious, and their number in a few days was reduced to two or three in the twenty-four hours, and on March 14, he was considered perfectly well,

though he remained some time longer in the house on account of a diseased tibia.

The next case illustrates the use of the remedy after the failure of others.

A man, named Henry Hurle, aged thirty-seven, was admitted October 6, 1825, on account of frequent bloody and mucous stools, under which he had suffered for five weeks. He had been in the Brazils, the West Indies, North America, and the Mediterranean, but had resided in England for nine years, and worked last at the iron works in Wales.

He was ordered one scruple of hydrargyrum cum creta and one grain of opium twice a-day. The quantity of opium was increased to one grain, to one grain and a half, and finally to two grains; and a half a pint of dec. hæmatoxyli was drunk daily.

On the 15th of November he had not improved, and I prescribed half a grain of Sulphate of Copper, with but one of opium. The dose of the salt was soon increased to one grain, and that of the opium to one grain and a half.

He was discharged perfectly well on December 22.

Another man, named Aaron Newman, aged thirty-five, who had been in the West Indies, and attacked with dysentery there, was admitted March 23, 1826, for profuse diarrhœa of eight months' standing.

He took one grain of the Sulphate of Copper, twice a-day, with one grain of opium; then one grain and a half; and then this quantity, with the original dose of opium, three times a-day; and left the hospital quite well April 27.

The last with which I will trouble the Society, was one of four years' standing, but at intervals. The man, named John Mundy, was thirty years of age, and the stools were bloody, and not fewer than ten every day.

I prescribed one grain of the Sulphate of Copper, with one grain of opium, twice a-day.

In five days, as he was no better, he took his medicines three times a-day, and in four more, the dose of the salt was increased to one grain and a half. In a fortnight the stools were reduced to two or three in the day and night, and they never afterwards exceeded this number; they also ceased to be bloody, though formerly they were invariably so. The dose of the salt was augmented to two grains and a half; the motions acquired consist-

ence and their natural frequency; the man felt well and strong, and was discharged on the 18th of May.

I could greatly extend this list, but the narration of cases is always tedious, especially when they are so similar, as such must necessarily be to each other; and the preceding sufficiently illustrate the power of the remedy. I will therefore content myself with mentioning the general results of my experience during the last two years and a half in St. Thomas's Hospital, where a great number of sailors are admitted labouring under intestinal affections consequent upon dysentery in hot climates.

I am satisfied that the Sulphate of Copper is superior to every other astringent in chronic diarrhœa,—that it will cure the disease more quickly than any other, and often when all others fail.

Three grains three times a-day is the largest quantity I have prescribed; but this I have frequently given. The dose usually borne and required varies from a grain and a half to three grains. It may be taken for an indefinite time without any fear of constitutional ill effects.

I had two very severe cases, in which the quantity of blood and matter in the evacuations, and the wretched appearance of the countenance rendered

the existence of great disease of the inner surface of the intestines probable, and which would most likely have proved fatal but for the remedy. It arrested the complaint after a time, but such had been the severity of the disease, and so much reason was there for apprehending mesenteric affection, and thickening of all the substance of the intestines, that, if it was omitted for a week, the diarrhœa in some measure returned. These patients took it between three and four months, in doses of two and three grains three times a-day, with no other effect than that of controlling the disease, and improving the appearance in a degree which surprised every one *.

It certainly has a tendency to produce vomiting and griping. On these accounts I have always combined it with opium, and never, but in the first case, and then only for a week and at the cessation of the disease, ventured to exhibit it alone †. No inconvenience resulted, and I have generally found

* July 21, 1827. I take advantage of the interval which has elapsed before the paper is printed, to add that these men have both recovered, after taking the medicine about six months. Without it, I am convinced that they would gradually have sunk.

† With the first of the patients mentioned in the preceding note, I gradually lessened the quantity of opium till it was omitted altogether, and he took three grains of the sulphate alone three times a-day, for the last six weeks that he was in the hospital.

a grain and a half of opium sufficient to prevent even three grains from griping in the least. Notwithstanding the unquestionable cooperation of the opium with the sulphate, the far superior share of the salt in curing the disease has been repeatedly proved by the previous failure of opium alone, or combined with other astringents, and by the dose of opium being actually diminished when the copper was superadded.

The disposition to occasion sickness is much diminished by administering it, like all medicines inclined to disagree with the stomach, and intended to pass the organ without sensible effect, in the form of pill and after food has been taken. A dose of it, as well as of oxymuriate of mercury or tartrite of antimony, which would cause sickness, if taken in a liquid form or before breakfast, will be borne perfectly well, and frequently indeed a much larger dose, if taken in the form of pill and after a meal.

In thus recommending a medicine for a purpose which, as far as I know, has not been mentioned by any author, I am anxious, as upon every such occasion, however great its excellence, not to excite too high an expectation,—not to appear pretending that it is universally applicable, and that it never fails. In cases only in which astringents are proper is it proper; and although ulceration of the inner coat of the intestines, and very extensive

ulceration, will heal *, and the Sulphate of Copper will contribute to the cure more than any other medicine, the mischief may be irremediable by any measures; and, on the other hand, chronic diarrhœa is frequently kept up by the state of mind, by the mode of living, or by the residence. No medicine can alter these, and I knew two examples of the failure of it and all other remedies, when a removal from town cured the disease in a few days, and a return to the metropolis was invariably followed by a return of the diarrhœa.

Grafton Street, April 10, 1827.

P. S.—In the paper upon the Subcarbonate of Iron that the Society did me the honour of printing, I made an additional and confirmatory report upon *prussic acid* and *pulvis antimonialis*. Perhaps I may be at present allowed to do the same with respect to quinina and the subcarbonate of iron.

Since the appearance of the paper upon *quinina*, I have attended near a hundred and fifty cases of

* Instances may be found in the writings of Dr. Andral, in Dr. Peter Latham's work upon the disease of the Penitentiary, and in the Journal Général de Médecine of last year. The most extensive, I believe, is related in Mr. Howship's book on Morbid Anatomy:—a very long tract of ulceration was found healed.

ague, and treated all with the sulphate. Many were combined with so much inflammation in the abdomen, chest, or head, as to require venæsection, some with dropsy, some with a chronic disease of the lungs or liver, but *every one was cured.* Having never seen it augment any inflammation that might be present, or interfere with antiphlogistic measures, I have always given it under all circumstances, and simultaneously adopted any other measures that might be demanded by other symptoms. Some cases, and those were generally quartans, would not yield to less than five grains every four hours; but this quantity has never failed after being exhibited a week or ten days. Like mercury in syphilis, I have frequently seen its use followed by a relapse, when not continued a proper length of time after the cessation of the disease. It cannot be a matter of surprise that a fresh exposure to the causes will also renew ague after a cure, precisely as happens with syphilis after the successful exhibition of mercury. The disease in London may in general be arrested *immediately*, by the exhibition of ten grains at once, just before or after the paroxysm.

Dr. Home* found the bark much more successful after than before the paroxysm, and this is my experience with quinina. I am convinced that the best practice is first to give ten grains as soon as the paroxysm is over. This almost always (the ex-

* Home's Clinical Experiments, Histories, and Dissections.

ceptions are generally quartans) prevents the paroxysm next expected, and if repeated daily at the same hour, often cures the disease. But as ten grains given in any number of doses in the twenty-four hours are frequently insufficient to conquer it, and half a drachm may be required, it is sometimes necessary, in addition to these ten grains after the fit, to make the whole quantity in the twenty-four hours amount to a scruple or half a drachm, by small doses also, every six or eight hours.

The chief object of the paper upon the *subcarbonate of iron*, was to show that it might generally be given in doses of three or four drachms, and that it was almost a specific for chorea. The former point is now considered to be established, and I have since attended nine cases of the disease, *every one* of which yielded to the remedy. Some, like the former cases, were attended by head-ache, some had resisted other means. The time usually required varied from six to ten weeks: one was cured in four, and one in not fewer than twelve. I could not then satisfy myself that large doses were superior to small ones in any disease, but I have now met with several instances of disease yielding at once to large doses, after resisting those in common use. Its importance, to which also I then alluded, in many cases of chronic ulceration, has been again repeatedly proved. I have treated a genuine case of traumatic tetanus with it,

in doses of half an ounce every two hours, taken diffused with treacle in beef-tea, and the mitigation of the disease upon its exhibition was too obvious for me not to ascribe the cure to the remedy. I have always conceived that we are upon a wrong scent in our attempts to cure tetanus and hydrophobia by narcotics, and that we should employ other remedies which exert peculiar actions upon the nervous system. The full powers of iron deserve to be put fairly to the test, when its exhibition is practicable.

There is a remedy upon which I am anxious to make a report, because I have had ample experience of its utility. During the last three years I have employed *Acupuncture* very extensively, both in private and at St. Thomas's Hospital, in rheumatism. My experience perfectly coincides with that of Mr. Churchill,—of it being chiefly useful in the rheumatism of fleshy parts—rheumatalgia; and the more so, as the disease is less inflammatory. Indeed when the parts are hot, or the pain is increased by heat, the remedy is generally useless, and cannot supply the place of antiphlogistic measures. On the same principle I have never seen it beneficial in any inflammation or inflammatory pain. Like Mr. Churchill, I find that one needle allowed to remain an hour or two in a part, is more efficient than several used but for a few minutes. The effects are often magical. The pain sometimes ceases while the needle

is in the flesh, but generally three or four applications to each painful part are required. I have known the disease not entirely yield before the ninth. Of forty-two cases taken in succession from the Hospital books, thirty were cured; and the other twelve were clearly not adapted for it, as they were either accompanied or aggravated by heat, and yielded afterwards to antiphlogistic measures. It is occasionally a good mode of letting off the fluid of anasarca: but for this purpose the needle requires to be passed merely through the skin, and not to an inch or an inch and a half, as in rheumatism. Neither is its use always attended with ~~success~~ safety, as in rheumatism. When practised below the knees, I have heard of it producing mortification; but above them, and in the arms and trunk, it appears free from danger.

HISTORY

OF

A FUNGOUS ERUPTION,

CURABLE BY MERCURY,

BUT

NOT OF VENEREAL ORIGIN,

BY

WILLIAM WALLACE, M.R.S.A.

SURGEON TO THE CHARITABLE INFIRMARY OF DUBLIN, TO THE INFIRMARY FOR THE TREATMENT OF DISEASES OF THE SKIN, ETC. ETC.

COMMUNICATED BY

MR. TRAVERS.

Read December 26, 1826.

CASE I.

MARTIN LAVIN, aged forty years, of a tall and slender figure, with a pallid countenance, a poor man, earning a livelihood by a traffic in old clothes, broken glass, &c. applied at the Skin Infirmary, on the 16th of October, 1819, to obtain relief for a disease, of which the following is a description.

A number of tumours, some about the diameter and elevation of a filbert, others as large as a small

walnut. On an accurate examination, they were observed to be crusted, or covered with a yellow-brown scab, and to be surrounded, to the extent of about two lines, by an areola of livid-coloured skin, which was rough, in consequence of desquamation of its cuticle. On removing the scab or crust, it was found to form a covering or cap to a fungus or excrescence, of a pale or dirty pink colour, having but little sensibility when handled, and exactly resembling in figure a small mulberry or raspberry. There were also, on many parts of the surface of the skin, marks or stains of a rounded form and livid colour, of the same diameter in general as the fungi, scarcely elevated above the surrounding skin, wrinkled, and in some situations with the cuticle covering their surface in a state of furfuration.

Each of the existing fungi, and several others, which he says have been cured, commenced, according to his description, in an itchy pimple, which gradually increased without much soreness or itching; and having existed for some time, many imperceptibly shrunk away, leaving behind them the livid marks above mentioned. Nevertheless, it does not appear that they spontaneously subsided, but in consequence of unguents, which he applied to them.

The fungi, at present in existence, are five in number, and are seated, one in each of the follow-

ing situations, viz. in the nape of the neck, close to the hairy scalp; on the left of the anterior part of the abdomen, a little above the umbilicus; on the anterior fold of the right axilla; on the corresponding arm, immediately above the internal condyle of the humerus; and on the upper and outer part of the right thigh.

There is no pain in any of his joints or bones, no soreness of his throat, no perceptible derangement of his general health.

He attributes the origin of these fungi, which he says commenced in last April (six months previous to his application at the Skin Infirmary), to lying in dirty beds. Has a wife, with whom he cohabits, and has not communicated the disease to her. He never saw any person labour under a similar disease. Denies having ever had gonorrhœa or chancre. Has not had his health deranged in any way, either immediately before the appearance of the fungi, or at any time since.

He observes that, in July, he procured some mercurial pills, and having taken them, so as to make his mouth sore, the fungi disappeared almost entirely; but, being obliged at this period to leave the city, he had no means of persisting in the use of the medicine, and shortly after leaving it off, those which had shrunk gradually became larger, and others appeared.

The above patient was admitted into the Charitable Infirmary, and having taken ten grains of the blue pill for a few nights, his mouth became tender, all the fungi quickly shrunk, and, at the end of about six weeks, they had entirely disappeared, when he eloped from the hospital, without my knowledge or permission, and I have never since heard of him.

CASE II.

James Walsh, a labourer, residing in the country, aged 23 years, of a sanguineous complexion, and of a short and strong stature, applied at the Skin Infirmary, April 8, 1820, on account of a fungous disease of the skin, of the following characters.

On the head, trunk, and lower limbs, there are several fungi, varying in size from that of a pea to that of a walnut. Those which are on the scalp are by much the smallest; the largest is seated on the front of the right thigh, a few inches above the patella, surrounded by a deep seated and extensive hardness, and has in some points become an excavated ulcer. All the fungi, with the exception of the large one just alluded to, are covered by a yellowish brown scab, which must be removed to see their fungous character. Each fungus is surrounded by a livid ring or border, the cuticle of which is in a state of furfuration. They are attended by a very troublesome itching, particularly

at night, and are very sore after being handled or rubbed.

On being asked to describe the manner in which these fungi make their appearance, he pointed out to me, by way of illustration, on the occipital region of the scalp, a very minute yellow scab, not larger than a pin's point, covering a little fungus, perceptible with the assistance of a lens, and obviously surrounded by an erythematous colour of the scalp, and attended by an itchy sensation, which appeared to direct his attention to the part. He added that they begin by small pimples, which corrupt, and become covered with a crust. There are on several parts of his body circular livid spots, about the same diameter as the fungi. Some of these spots, particularly one which is on his forehead, have their surface slightly elevated above the surrounding skin, the cuticle in the state of desquamation. The redness of these spots disappears almost entirely on pressure, and they are not attended by any morbid sensation. These are the marks that have been left after some of the fungi, which have shrunk away on the application of unguents.

The general surface of the skin feels dry and harsh, and exhibits here and there a branny appearance with minute papulæ in the state of desquamation. His sleep is much interrupted by a general itching of the skin, which becomes par-

ticularly severe upon being heated in bed. He says he has a bad stomach, and very often becomes sick after eating. He has laboured under disorder of his stomach, and the general pruriginous affection of his skin for several years; but the fungous disease is not of longer standing than four months.

No pains in the articulations or in any other parts of the osseous or fibrous textures,—no soreness of his throat,—does not know any cause to which he can attribute the disease,—has slept with others and never gave it to them, and at present sleeps with a lad, aged sixteen years, who is free from any cutaneous disease.

This patient took ten grains of blue pill every night from the date of his application for relief to the fourteenth of May following, a period of thirty-six days. It scarcely affected his mouth, yet he had only taken it a few days when almost all the soreness attendant on the fungi subsided, and the marks left by the old fungi sunk to a level with the surrounding surface. On the fourteenth of May, when he ceased to attend at the dispensary, all the fungi were covered with skin; the surface upon which they had been seated remained, however, slightly higher than the surrounding skin, and in a state of desquamation.

It may perhaps be worthy of remark, that although he was so rapidly relieved from the fungous

disease by the use of the blue pill, the pruriginous eruption was considerably aggravated during its administration, and several of the minute papulæ became pustules.

CASE III.

John Moor, a labourer, aged nineteen years, slender stature, fair hair, light-blue eyes, presented himself as a patient at the Skin Infirmary, on the 27th of April, 1820, labouring under a cutaneous disease of the following nature: a number of tumours situated in the groins, at the root of the scrotum and penis, and at the superior and anterior part of the thigh, arranged as in the drawing, varying in magnitude from the size of the end of a finger to that of a walnut, covered by a dirty yellow-brown scab, and surrounded by a livid red border, in the state of desquamation. On removing the scabs covering these tumours, a granulated surface very considerably elevated above the level of the surrounding skin is exposed. The scabs do not appear to have lain in close contact with the fungi; but there is observed to be interposed between them a small quantity of matter, which adheres to the excrescence, so that the granulations of the surface of the fungus are seen only at certain distances, raising their heads as it were, through this matter. When they are deprived of the scab, and left uncovered for a few minutes, a

fluid of an amber colour, and perfectly transparent, exudes and collects into drops on their surface. These fungi are remarkably sore and itchy when rubbed or irritated.

There are situated on the front of his thighs, and in some measure intermixed with the tumours already described, dark red spots or stains, of a rounded form, in diameter less than the fungi, their surface a little elevated, and their cuticle in a state of desquamation. Some of these spots are, according to the patient's account, marks left by excrescences similar to those still existing; but others, he asserts, have never had any appearance different from that which they now present. There are also on his hams, on his nates, and on the outside of his arms, similar spots or stains, which, he says, never exhibited the fungous appearance. His account, however, of these stains is not very satisfactory. He also complains of a general itching in his skin. The first of the excrescences commenced about three months ago. He has no soreness of his throat, although the mucous membrane of the soft palate and fauces appears to have its vessels a little more enlarged and tortuous than natural. He has no pains, nor does he feel in any way unwell in his general health, although he is much thinner and paler, he says, than is natural to him. He does not attribute the disease to any cause. About two years ago he had a gonorrhœa, and never any other venereal disease.

On the 28th of April he was admitted into the Charitable Infirmary, and from the day of his admission to the 8th of May following I avoided giving this patient any medicine, wishing to watch the progress of the disease. Two of the fungi were kept covered by a poultice. During this period I could not observe the slightest alteration, unless it might be said that those which were covered by the cataplasm became somewhat paler and flatter, and, although much above the surrounding level, they shewed some tendency to cicatrize. He now became impatient, and having ordered him ten grains of blue pill every night, he was discharged in the middle of June perfectly well, the medicine not having, during this period, affected his system farther than to produce a very slight tenderness of his gums.

It may be observed that the largest of the fungi in this patient was seated at the root of the penis, among the hair of the pubes, that the hair grew up in the substance of the fungus, and that when the latter subsided the hair was left uninjured.

The disease which I have exemplified by the relation of the three foregoing cases, I would venture to denominate "Morula", from morus, a mulberry. This term marks its most prominent feature, a fungus of a rounded and granulated form.

Although the appearances of this disease are very remarkable and peculiar, and the phenomena which it exhibits during its progress regular and determinate, it has not, so far as I can learn, been described by any author*. In its appearance and mode of growth, it may be said to resemble somewhat the yaws; they differ however in so many respects, judging from the descriptions which we have of the latter, that I do not consider myself warranted to describe it as a variety or a species of this affection.

It is to be observed that I have not had occasion to see or treat this disease, except among hospital patients, and although the avocations of those whom I have observed to labour under it, have been various, it is nevertheless also remarkable that the majority of them have been either males or females who got their livelihood by a traffic in

* Mr. Carmichael has alluded to a disease in his late publication on Venereal Affections, which appears to resemble this. He does not, however, consider it of venereal origin; and if the disease to which he has alluded be the same as the one here described, he is evidently unacquainted with the remarkable influence of mercury over it, as his mode of treatment consists in the administration of pitch pills to such an extent as the stomach will bear; a remedy, from which I have never observed, in this disease, the slightest advantage to arise. It is therefore probable, that the removal of the disease, when the patients were under the employment of these pills, must be attributed to some topical application which had been made to the fungi, or to the patients inhabiting wards in which much mercury was employed.

old clothes, rags, and such like merchandize; but some of my medical friends, resident in the country parts of Ireland, from whom I have made inquiry on the subject of this disease, inform me that they have frequently observed it among the peasantry. I have never remarked the disease in very young or very old subjects. I should therefore say that it occurs most frequently in the middle periods of life; and although I have seen both males and females afflicted with it, yet I have no hesitation in saying that it occurs much more frequently in the former than the latter*.

Often as it exists in connexion with a state of the system more or less unhealthy, and along with a more or less remarkable pruriginous affection of the skin, I cannot say that it has, with these states, any necessary relation. I have never seen the subjects of it labour under any of those affections of the mucous surfaces, or of the osseous or fibrous systems, or of the eye, which mark the progress of syphilitic diseases; nor am I acquainted with a single fact which could cause the slightest suspicion that it is a disease of venereal origin. On some occasions there has been reason to suppose that it was propagated by immediate contact, (an opinion which would ap-

* I find, from the registry of the Infirmary for the treatment of cutaneous diseases, that from its foundation in 1818 up to the present time (June 1826), eighty-one cases of the disease have been treated at this Institution.

pear to be strengthened by a consideration of the habits and circumstances of those who generally labour under it,) nevertheless, the instances in which it appeared to be void of all contagious qualities have been so numerous, that I should hesitate before I would say that it was capable of being propagated by its secretions. This is however, in general, the opinion of the patients themselves; but when the source of their opinion is investigated, they are not able to give a satisfactory reason for it. I have certainly observed several members of the same family to labour under the disease at the same time, but it has also occurred to me to observe it in an individual of a family, and this upon occasions when the affected person occupied the same bed with others who were free from the disease: the husband has had the disease when the wife was free from it, and vice versâ.

There is scarcely a part of the cutaneous surface, except the palms of the hands and soles of the feet, upon which I have not observed these fungi. They uniformly commence, as far as my observation goes, in minute pimples, which become quickly covered on their apex by a very small scab, upon the removal of which may be observed the germ of the future fungus, consisting of a single granulation, and so minute as to require for its discovery the assistance of a lens. At this period the spot is itchy, and is surrounded by a slight

erythematous redness. Its size gradually but progressively increases. In the course of some days, a scab of several lines in breadth, of a brownish yellow colour, and considerably elevated, will be found to cover a fungus of a rounded figure and granulated surface, of a yellowish red colour, sore to the touch, and surrounded by a slight livid redness. The size to which these spots are capable of increasing as fungi is, I believe, limited. I have never observed them larger than about one inch and a quarter in diameter, and I have generally remarked that when the spot acquired about an inch in diameter, the action of the vessels of the part changed, and the fungus becoming absorbed, an ulcer was produced. If credit could be given to the observation and reports of the patients themselves, it would appear that many of the fungi, upon arriving at a certain magnitude, shrink and fade away; but whether a fungus, after it has been once decidedly formed, ever disappears, except by the formation of an ulcer, without the interference of art, is a point upon which I cannot speak decidedly from my own observation.

Although those fungi which occur on the hairy scalp are in general smaller than those in any other situation, I have on several occasions observed the largest fungi to exist on the scalp, and in one case among the hair of the pubes. When a fungus grows on a part covered with hair, the growth of

the hair of the spot affected has not appeared to be interrupted, for the hairs have grown up through the fungus. The fungi are uniformly larger, fuller, redder, and altogether better developed in young, healthy, and sanguineous subjects. The scab may with care be taken off any of the fungi, however large they may be, without causing any bleeding, apparently from there being interposed a stratum of fluid between the fungus and the scab. When the fungus has been deprived of its covering, and allowed to remain a few minutes exposed to the air, there is observed to exude from it a transparent amber-coloured fluid, which concretes after a time into a scab, and thus forms for the fungus a new covering; but, if the fungus be covered with any unguent or cataplasm, the surface of the granulations pours forth, in small quantity, a puriform fluid, so long as it is protected by these artificial coverings.

One of the most remarkable circumstances connected with the growth of these fungi, is the power which the part, upon which they are seated, possesses of healing, without the formation of any permanent cicatrix: demonstrating that these fungi grow from the *surface* of the cutis, and that the texture of this covering is not permanently injured. Indeed, if the fungus be healed *before the process of ulceration has commenced*, no mark whatever, except a temporary redness, with a disposition to furfurate, remains; but if ulceration has

taken place, a permanent cicatrix is necessarily produced. I have, however, on many occasions remarked a fungus to heal without either ulceration or a permanent cicatrix, after it had arrived at the magnitude of a walnut. While observing the progress of cicatrization, I have remarked that although it generally advanced from the circumference towards the centre, sometimes this was not the case. The large fungus, which was seated on the thigh of Walsh, (Case II.) and which was at first without any crust, in the course of a few days became covered by two scabs, one on the upper and another on the lower part, and these separated by an interval which corresponded to the centre, and which healed first. In some cases the semidiameter of a fungus will heal entirely, before the process of cicatrization has commenced in the other half.

The number of fungi, which are capable of existing on the same individual at the same time, is subject to great variety. I have seen cases when there was only one, and it is remarkable that on these occasions the fungus was, I believe, always extremely sensible. Sometimes I have seen as many as fifty on one patient, and I think it may be said that their magnitude is in general inversely as their number. Whether the fungi be great or small, few or numerous, they are, if not constantly, at least very uniformly of a

circular figure. Sometimes two coalesce, and form the figure 8.

What the progress or termination of the disease would ultimately be, if left to itself, I cannot pretend to say, farther than to testify that it would be extremely tedious. Whether it would wear itself out or not, I cannot decide. On several occasions I have made efforts to watch its progress, uninfluenced by treatment, but its course has been uniformly so slow that the patient has become discontented, and I have been obliged to enter on its cure and removal, before I could arrive at any satisfactory result. On other occasions patients who had been treated for this disease have returned with the same affection; but whether this arose from any tendency which the disease has to relapse, or to the patient not having remained a sufficient length of time under treatment, I cannot determine, although I believe the latter to be the fact. I have not remarked that the disease becomes more intractable by long standing, or that it is more difficult to remove when it re-appears, after having been imperfectly treated.

In the whole catalogue of maladies which are capable of being cured or relieved by mercury, I do not know any which exhibits the value of this mineral more remarkably than the disease in question. I believe it matters nought whether this va-

luable agent be employed internally or externally. If internally, whether it be used as an oxide or salt; if externally, whether it be employed in the form of an unguent, vapour, or fluid, for the disease immmediately shrinks, *as soon as the slightest mercurial action in the system is manifested.* I generally retain the patients under care five or six weeks, and use the remedy to such an extent as to cause its gentle but marked influence on the system; and the form in which I employ it is varied according to the peculiar circumstances or convenience of each case.

Although mercury in some form or other, so as to affect the system gently, is the remedy which I now uniformly employ, and with which I always succeed, it is proper to remark, that local applications to the fungi, which cannot be supposed to act on the general system, appear to have the power not only of controlling their growth, but also of causing their removal. The operation or influence of these topical remedies is however uniformly slow, frequently uncertain, and often causes the fungi to become extremely painful; and although they may clear the surface of all the fungi, which exist at the time of their application, the impression on my mind is that they do not destroy the disposition to the formation of new ones. Of the local means which I have found most serviceable, I may mention solutions of the sulphate of copper, of the nitrate of silver, and ointments of the sub-

acetate of copper, of tar, and above all, those unguents into which mercury enters as an ingredient.

P. S. Since the period at which this essay was first written, some facts have come to my notice, which lead me to the conclusion that the fungous disease, described in it, is infectious, upon which point I had then a doubt.

A child at the breast contracted the disease from its nurse (not its mother). There were fungi on the breast of the nurse, and it was the face of the child which was affected. I have had a second case of the disease in an infant under one year old. In this instance the mother was affected by the fungi. I find that when the disease occurs at this early period of life, the fungi are surrounded by an areola, resembling the vaccine areola. Both these children were cured by administering mercury to their nurses.

I have also had a case, which proves the possibility of the disease attacking the hand. There was a fungus, in this instance, on the ball of the thumb.

CASES

OF

FRACTURED NECK OF THE THIGH-BONE

WITHIN

THE CAPSULAR LIGAMENT,

WITH THE

DISSECTIONS AND OBSERVATIONS.

BY

GEORGE LANGSTAFF, SURGEON.

Read May 8, 1827.

ON the 19th of March, 1827, a specimen of fractured thigh-bone, within the capsular ligament, which had united by bone, was exhibited by Mr. Amesbury, at the Medical Society, Bolt Court. This preparation belonged to Mr. Chorley, of Leeds, by whom the patient had been attended, and by whom the history of the case was communicated.

The discussion of this case exciting considerable interest, I was induced to mention a preparation

I have in my collection of a thigh-bone, which had been fractured at its neck, within the capsule, where bony and cartilaginous union had taken place; and on another evening I showed it to the Society, with other specimens of this accident, exhibiting the various changes which take place to effect union. I also drew up a brief history of the cases and morbid appearances, adding some observations on the possibility of osseous union, and the causes of the shortening of the cervix femoris. I now take the liberty of bringing them before the members of the Medical and Chirurgical Society, with the preparations and drawings from them, hoping they will be considered deserving a place in their Transactions, which do not contain any description of similar accidents, nor of the changes they occasion.

The nature of fracture of the neck of the thigh-bone, within the capsular ligament, and the want of osseous union, has for several years engaged the attention of some of the ablest anatomists and pathologists of this and other countries.

The dissimilarity of opinion respecting the possibility or impossibility of osseous union of the fractured cervix femoris, has been great, but I believe generally in favour of non-union by bone.

This practical inference has been drawn from the numerous preparations which have been pre-

served to shew the want of osseous deposition, in this species of fracture, and the supposed absence of any specimens in which complete bony union had taken place.

These circumstances induced Sir A. Cooper to assert, in his valuable observations on this subject, that union by bone never takes place; but he at the same time judiciously admitted the possibility of this event, as will be seen by the following abstract from his Treatise on Dislocations and Fractures of the Joints, page 127. "In all the examinations which I have made of transverse fractures of the cervix femoris, entirely within the capsular ligament, I have never met one in which a bony union had taken place, or which did not admit of motion of one bone upon the other. To deny its possibility, and to maintain that no exception to the general rule can take place, would be presumptuous, especially when we consider the varieties of direction in which a fracture may occur, and the degree of violence by which it may have been produced; as for example, when the fracture is through the head of the bone, and there is no separation of the fractured ends; or when the bone is broken without its periosteum, and the reflected ligament which covers its neck, being torn; or when it is broken obliquely partly within, and partly externally to the capsular ligament. But all I wish to be understood to say is, that if it ever does

happen, it is an extremely rare occurrence, and that I have not met yet a single example of it."

Having had, during my pathological pursuits, the opportunity of attending several cases of fracture of the neck of the thigh-bone within the capsular ligament, and the advantage of inspecting, in eight cases, the injured parts after death, I have long been satisfied of the possibility of union by bone, from noticing the near approaches nature had made to effect this end in the specimens I possess; but why the ossific union of fractures within the capsule was of more rare occurrence than in fractures exterior to that ligament, is still a pathological problem of difficult solution. That the arteries belonging to the hip-joint are capable of producing bony union within the capsule, there can be no doubt; nor can there be any doubt that this would take place, as in other fractures, if the parts could be kept steadily in juxtaposition, and a sufficient length of time were allowed to make the union complete.

This I think will be sufficiently evident to any who will attentively examine the preparations, which I shall proceed to describe to the Society. These preparations shew very clearly the various changes and reparative processes, which take place in the different parts connected with the hip-joint; exhibiting the gradations from the incipient to the most

complete ligamentous union; also the first attempts at union by bone, and the mode in which complete ossific union is effected. I shall describe them in the order in which they have been numbered in my collection.

No. 242. Sections of a thigh-bone, shewing an oblique fracture of the neck within the capsular ligament, also a fracture of the upper part of the shaft of the bone, between the trochanters.

The fracture within the capsule had been of the comminuted kind, several small portions of the fractured bones having remained between the separated head and neck of the thigh-bone, which had completely prevented union of any description, although these surfaces had approached as closely as the separating fragments allowed.

The neck of the thigh-bone had been nearly absorbed; the fractured bones were brought into pretty close contact by the periosteal covering; the capsular ligament was greatly thickened, and closely embraced the joint. The fracture external to the capsule, had united firmly by bone, on its outer surface, and a large process of bone had formed at the inferior part of the neck of the os femoris, giving a kind of prop or crutch to the joint. The ligamentous line, denoting the extent of the fracture, was still apparent in the internal

part of the bone, which line remains in all fractures long after the parietes have become osseous, but in time is absorbed, and bone supplies its place.

The patient was a female, 60 years of age. At the time of the accident the foot was turned outwards, and there was a slight shortening of the limb. She was confined in bed nearly twelve months: considerable shortening of the limb during this time took place, which was easily accounted for from the absorption of the neck of the femur. She could not walk without the aid of crutches.

An engraving of one section of this preparation is given in Sir A. Cooper's work. No. 1. is a drawing of the opposite half.

No. 1913. Fractured neck of the thigh-bone within the capsule, united by ligament. The capsular ligament of an immense thickness externally, from the deposition of lymph, and the internal surface thickly coated with lymph and a cartilaginous deposit. The neck of the thigh-bone completely absorbed, and the trochanter major drawn upwards and backwards on the dorsum ilii, giving the appearance of dislocation. This patient died of diseased liver, three years after the accident.

The limb at the time of his death measured four inches less than the sound one, which measurement

is shorter by two inches than in any of the cases I have seen. This preparation has been alluded to in Sir A. Cooper's work.

No. 1999. A fracture of the neck of the thigh-bone, through the base of its cervix; a specimen of very close ligamentous union. There had also been a fracture of the thigh-bone, between the two trochanters, which had united by bone.

The capsule was greatly thickened, and a deposition of osseous matter had formed on the under surface of the neck of the bone, between the trochanters, major and minor. The interstices of the cancelli of the bones are filled with the matter of medullary sarcoma.

The patient was a female, 56 years of age, who had been afflicted with carcinoma mammæ for nearly two years; and in consequence of the glands in the axilla not appearing to have participated in the morbid action, the removal of the breast was decided on, as the only chance of saving life, and the operation was performed by my friend, Mr. Lloyd. Her health, a few months subsequently to her recovery from the operation, became seriously affected, a recurrence of the disease took place in the part whence the mamma had been removed, and tumours of the fungoid character appeared under the skin, in various parts of the body; she

became greatly emaciated and enfeebled, and in attempting to get out of bed, she fell on the floor, which occasioned the fractures.

In this instance the toes were, immediately after the accident, everted, but became afterwards inverted.

To Mr. Semple, of Islington, I am indebted for the preparation and particulars of the case.

Nos. 2030 and 2031 are sections of a thigh-bone, shewing an oblique fracture of the neck within the capsule, which had united by ligament. At the inferior part of the head of the bone, an angular portion of the fractured neck remains, which is thickly covered with ligamentous matter on its fractured surface; the same change had taken place on the fractured part of the head of the bone, and firm ligamentous union had been produced between these parts and the base of the cervix femoris, the neck of the bone having been absorbed. The capsular ligament is converted into a very dense semicartilaginous substance, which adhered closely to the newly-formed joint; and for the better protection of this part, the vessels of the periosteum had formed osseous matter in abundance, between the two trochanters: thus a prop of bone is given to the angular remains of the cervix belonging to the head of the femur.

This preparation has been alluded to by Sir A. Cooper.

These specimens were taken from a gentleman 65 years of age, who was thrown from his gig, and his hip-joint so severely injured as to prevent him making the least use of it. He was taken home, and a surgeon sent for, who considered the case only a severe contusion. He remained under this gentleman's care three weeks; the patient was then seen by two distinguished surgeons, separately, who examined the limb attentively, but from the swollen state of the parts, were prevented deciding positively upon the nature of the accident.

The patient was attended for some time by one of the surgeons, who considered the injury to be in the trochanter major. After the subsidence of the inflammatory symptoms, a caustic issue was established behind that process.

After nearly twelve months' confinement he tried to use the limb with the aid of crutches; there was considerable shortening of the limb, and he was a complete cripple. Some time previous to his death he was able to walk with two sticks.

I only attended the patient during his last illness, which was occasioned by a calculus in the ureter, which had caused ulceration of this canal, and allowed the urine to pass into the cellular tissue

connecting the psoas and iliacus internus muscles, which produced sphacelation of this structure.

No. 2090. A transverse fracture of the neck of the thigh-bone within the capsule, united by ligament. A considerable portion of the neck of the bone had been absorbed, and the fractured surface of the head had been slightly excavated by the same process; afterwards these parts had been covered by lymph. A considerable portion of the fractured surface of the neck of the bone had been absorbed, and rounded off so as to make a kind of head, which is received into a concavity in the head of the bone, thus forming an artificial joint. The internal surface of the capsular ligament is more natural in structure than in the other specimens I possess, but its cellular or external surface, surrounding the inferior part of the joint, is converted into osseous matter of considerable density, which had united to a large process of bone, formed between the two trochanters, and there was a kind of joint produced between the trochanter minor and the bone on the capsular ligament. This is the nearest approach to complete union I have seen, except No. 2293, which will be described.

The patient was 52 years of age; he received the injury eight years previous to his death.

On the receipt of the accident he was taken to St. Bartholomew's Hospital, and placed under the

care of Mr. Abernethy. He remained several months in the Hospital, whence he was discharged when he was able to walk with crutches, which he continued to employ for six months after his dismissal. The power of the limb so much improved as to enable him to walk with a stick, and for a length of time previous to his death he required no artificial aid in locomotion, and there was very little lameness, merely what was occasioned by the shortening of the neck of the bone.

No. 2293. A transverse fracture of the neck of the os femoris, within the capsule, closely united by ligament. The neck of the bone had been absorbed nearly in a line with its origin from the trochanter. The asperities of the fractured surface had also been absorbed, and rounded off as they are in bones which have been sawn through in amputation; afterwards lymph had been effused, which had become highly organized, and formed a band of union between the surfaces, by strong short ligaments. Lymph had also been thickly deposited round the ligamentum teres.

A crutch of bone had not formed in this instance round the under and inferior surface of the capsular ligament, as it does in most cases.

The patient was a woman fifty-six years of age. The nature of the accident had not been discovered by the medical attendant, consequently no

mechanical means for producing union had been attempted. She was confined to her bed nearly twelve months; at the expiration of this period, she was able to walk with a crutch. There was a shortening of two inches of the limb. She died of an active disease, sixteen months after the accident. I merely had the inspection of the body. This and the last were the most favourable cases for osseous union I ever examined, and I believe if time had been given, after the cartilaginous changes had become complete, that their place would have been occupied by bone.

No. 2857. A transverse fracture of the neck of the thigh-bone, within the capsular ligament. The neck is nearly absorbed; there is close ligamentous union between the head and remaining neck of the bone, the capsular ligament is slightly thickened, and contracted round the brim of the acetabulum. The limb was shortened two inches. The patient was forty-nine years of age; she died of phthisis pulmonalis, about eight months after the accident; the cancellous spaces of the bones of the pelvis were filled by scrofulous matter. There are no signs of newly-formed bone near the trochanters in this case; such a diseased state of bone would not be likely to form osseous union.

No. 2858. A fracture of the thigh-bone at its neck within the capsular ligament, united by lymph, which had become organized. The neck

of the bone was shortened by absorption, but not so considerably as in most of the other specimens.

The patient only lived six months after the accident; the limb was shortened one inch and a half.

No. 2859. This is a specimen of fracture of the neck of the thigh-bone within the capsular ligament; the principal part of the neck is absorbed; the head and remaining portion of the neck were united principally by bone, and partly by a cartilaginous substance. The capsular ligament was immensely thickened, and embraced the joint very closely, the cartilaginous covering of the head of the bone and acetabulum had suffered partial absorption; the internal surface of the capsular ligament was coated with lymph.

On making a section of the bone, it was evident that there had been a fracture of the neck, within the capsular ligament, and that union had taken place by osseous and cartilaginous media. With a view of ascertaining whether there was real osseous union, the bone was boiled many hours, which discoloured it; but by destroying all the animal matter, it satisfactorily proved the extent and firmness of the osseous connexion, and the vacant spaces which had been occupied with cartilaginous matter; these appearances are well exhi-

bited in two drawings, made shortly after the boiling.

This specimen was sent to me shortly after its removal from the body, by Mr. Reeves, surgeon, Ormond Street, who also favoured me with the history of the case.

The woman was a patient of Mr. Cribb's, Holborn. She was about 50 years of age when the accident occurred. The foot was everted, and there was shortening of the limb at this time, and after death it was shorter than the other full two inches and a half. She was confined to bed nearly twelve months; during the remainder of her life, which was ten years, she walked with crutches.

No. 3105. A comminuted fracture of the thigh-bone, which had extended through the upper part of the shaft between the trochanters, and obliquely through the neck.

The patient was a woman, eighty-five years of age; she lived fourteen days after the accident; the periosteal covering of the neck of the bone had been lacerated, and an opening made into the capsular ligament of the joint, into which blood had been effused from the torn vessels; as well as into the cellular substance of the muscles of the thigh, near the fractured bone.

The preparation was presented to me by Mr. Pereira.

My motive for introducing this specimen is to show to what extent a fracture of this kind may extend in old subjects, whose osseous structure may have become morbidly fragile.

OBSERVATIONS.

From the very rare occurrence of osseous union of the neck of the thigh-bone within the capsular ligament, I feel confident that the specimen I have submitted to examination will be sceptically looked upon; but I am also certain that those gentlemen, who have been long conversant in the examinations of the various changes of tissue from læsion, and the processes of reparation nature employs, will agree with me in considering this specimen, a fracture united by bone.

Should this, however, not be admitted, I shall naturally inquire, what *accident* or *morbid action* could have produced such changes in the natural figure and structure of this bone, and also in the ligament and parts around it?

In fractures of the neck of the thigh-bone, there

is generally at the time of the accident a shortening of the limb; but this is not owing to a positive loss of the length of bone, except in comminuted fracture, but attributable to the glutei muscles drawing the trochanter major upwards towards the ilium.

The real shortening of the limb takes place at a remote period after the accident, from the absorption of the fractured portion nearest the trochanter; which fact may be seen by the inspection of the various preparations.

After the asperities of the bones have been removed by the absorbents, lymph is deposited, which becomes organized; the capsular ligament which is by this time completely altered in structure, having been greatly thickened by depositions on its internal and external surface, contracts firmly on the fractured bones; strong ligamentous bands are formed between the fractured surfaces, which have been thus changed, and union is occasioned, which has been generally found of the ligamentous kind; but when osseous deposition is effected, these soft media are absorbed.

In fractures within this joint, which have proceeded to such an extent as to be nearly approximated by ligamentous deposit or osseous union, the function of the joint is generally destroyed; while in those cases, where the patient has been allowed

after several months confinement to move about with crutches, the nature of the union and the support given to the joint by bone between the trochanters, produces a more useful limb, and is preferable to those where the fracture is so closely united as to be nearly anchylosed.

A BRIEF NOTICE

OF

SOME CASES OF INJURY

TO

THE HIP-JOINT.

BY

EDWARD STANLEY,

LECTURER ON ANATOMY, AND ASSISTANT-SURGEON TO ST. BARTHOLOMEW'S HOSPITAL.

Read June 5, 1827.

Fracture of the Trochanter Major, which may be mistaken for Dislocation of the Head of the Femur.

AMONG the more complicated injuries to which the hip-joint is exposed, that of fracture of the trochanter major, combined with fracture of the neck of the femur, has, under certain circumstances, a strong resemblance to a dislocation of the head of the bone. Whenever the fractured portions of the trochanter can be brought into contact, a crepitus will be produced which may enable the surgeon to ascertain the precise nature of the injury. But when, from the direction of the fracture, one por-

tion of the trochanter has been drawn by the action of the muscles towards the great ischiatic notch, no crepitus may then be discoverable, a direct source of mistake will then arise from the positive resemblance of the fractured portion of the trochanter to the head of the femur, the former occupying the same place which the latter would do in dislocation; and if, with these circumstances, there should happen to be an inversion of the injured limb, the difficulty of the diagnosis must be considerably increased. This obscurity, while it affords a strong motive for extreme caution in such cases in our own practice, should at the same time teach us to be slow in citing a mistake in the practice of others, as proving either ignorance or inattention. In this view the following cases may have some claim to the attention of the Society.

A woman, in her sixtieth year, fell in the street and injured her right hip. On examination, the limb was found slightly everted and shortened to the extent of three quarters of an inch, but moveable in every direction. The extremity of the shaft of the femur was in its natural situation, but behind the femur and at a little distance from it a bony prominence was discovered resting upon the ilium, towards the great ischiatic notch, strongly resembling the head of the femur. Various opinions were entertained as to the nature of

the injury, some believing it to be dislocation, and others, fracture. After a confinement of several months to her bed, the woman was sufficiently recovered to walk with the assistance of a crutch, and in this state she continued till her death, which took place about three years from the date of the accident, during the whole of which period I had watched the progress of the case. Having obtained permission to examine the seat of the injury, I ascertained that there had been a fracture extending obliquely through the trochanter major, and through the basis of the neck into the shaft of the femur, and that the prominence which had been mistaken for the head of the bone, was occasioned by the posterior and larger portion of the trochanter drawn backwards towards the ischiatic notch.

The next case is of a man aged sixty-five, who had been knocked down in the street. His skull was severely injured, and he had likewise sustained an injury in the right hip. His death took place on the tenth day from the time of the accident. The particulars of the injury sustained by the hip were as follow:—The limb was shortened and everted. Behind and at a considerable distance from the extremity of the shaft of the femur, a distinct prominence was discovered, so nearly resembling the head of the bone that it was presumed, a dislocation had occurred. On this pre-

sumption forcible extension of the limb was made, which shifted the prominence that had been mistaken for the head of the bone. On examination of the hip after death, a fracture was found extending through the trochanter major and through the basis of the neck of the femur. One portion of the trochanter had been drawn backwards into the situation which the head of the bone would occupy in dislocation; but it still retained sufficient connexion, by periosteum, with the shaft of the femur, to explain the change in its situation during the extension of the limb.

In Sir Astley Cooper's work on Dislocations, &c., the fracture of the trochanter major is noticed, but without intimation of any difficulty in the diagnosis.

Mr. Swan has related a case of injury to the hip followed by inversion of the limb, in which a tumour was felt behind the trochanter major, resembling the head of the bone. On dissection, a fracture was discovered extending through the basis of the neck and into the shaft of the femur. A portion of the shaft had been separated, and was found behind the trochanter major; but here, the crepitus produced on examining the limb precluded any mistake respecting the nature of the injury. Other cases have been stated to me in which even experienced surgeons have found it difficult to decide whether they were cases of fracture or dislo-

cation. These were probably fractures in which a portion of the trochanter major had been separated and forced into the situation which would have been occupied by the head of the bone in dislocation.

Fracture of the Neck of the Femur with Inversion of the Limb.

A middle aged man fell in the street, and his hip struck the curb-stone. The immediate consequences were that the limb was inverted and shortened to the extent of an inch: and no crepitus could be discovered. It was presumed that a dislocation had occurred: and accordingly an extension of the limb was made, and so great was the constitutional irritation occasioned by repeated trials to reduce the supposed dislocation, that the man died about five months from the time of the accident. In the dissection of the hip, a fracture was found extending obliquely through the middle of the neck of the femur, but entirely within the capsule. A portion of the fibrous and synovial membrane on the anterior side of the neck of the bone had escaped laceration.

In a male subject that had been brought for dissection, it was observed that the left lower extremity was turned inwards, and considerably shortened. On examining the hip, a fracture was

found extending through the neck and shaft of the femur. The neck had been broken at its junction with the shaft, and a fracture had extended from the upper part of the trochanter major, downwards, to the posterior side of the femur, a little below the trochanter minor. The upper part of the shaft was thus split into two portions, one of which was of sufficient magnitude to include the trochanter minor and nearly the whole of the trochanter major. The firm union of the several portions of the bone indicated that the fracture must have taken place a considerable time before death.

In the two last cases, it may be asked, to what cause the inversion of the limb should be attributed? whether to the direction of the fracture? if not, whether there be any other circumstance adequate to its explanation? In the instance of the fracture within the capsule, the portion of the synovial and fibrous membrane, which had escaped laceration on the anterior side of the neck of the bone, might probably prevent the limb from being turned outwards; but why it should have been turned inwards, I confess myself unable to explain. In the instance of fracture without the capsule, by considering the direction of the fracture in reference to the attachments of the muscles we obtain an explanation of both points. For as nearly the whole of the muscles, that rotate the thigh outwards, were connected with the separated portion

of bone, they must have ceased to influence the limb in one direction, and of course have left their antagonists at liberty to turn it in the other; and the fractured surfaces being permitted to unite without any change in the position of the limb, the inversion would become permanent.

In a valuable paper published by Mr. Guthrie in a former part of this volume, a case of fracture of the neck of the femur is related, in which the inversion of the limb seems, as in one of the cases just related, to have arisen from the direction of the fracture in reference to the attachments of the muscles rotating the thigh outwards. Another parallel case, and admitting the same explanation, is related by Mr. Syme in the Edinburgh Medical Journal, April 1826. This however furnishes no solution of the case where fracture within the capsule was followed by inversion of the limb, and as little will it explain the facts related by Mr. Guthrie in a second case, where the limb, at first everted, became a week after the accident so much inverted as to excite an apprehension that the nature of the injury had been mistaken. On this subject further information is still wanting.

Fracture of the Neck of the Femur without Injury to the Synovial and Fibrous Covering.

In several instances of recent fracture of the neck of the femur within the capsule, I have found

a considerable portion of the synovial and fibrous covering of the bone entire, and the extent of its laceration has obviously influenced the degree of displacement in the limb. This covering remaining entire on either side of the neck of the bone, must counteract the shortening of the limb. Should it be preserved entire on the anterior side, the eversion may be wholly prevented; and when, as in the following instance, the membrane is uninjured, the fractured surfaces in such case may be kept firmly together, and the limb secured from any change in its length or position.

A man, aged sixty, was knocked down in the street, and on his admission into St. Bartholomew's Hospital shortly after the injury, he complained of pain in the hip; but there was neither shortening nor eversion of the limb, and its several motions could be executed with perfect freedom and power. In this absence of all the usual indications, a fracture was not suspected: the patient therefore was merely confined to his bed. At the end of a fortnight he had an attack of inflammation in the intestines, from which he recovered, but suffered a relapse, and died in the fifth week from the date of the accident. On examining the body, no trace of injury was found in the parts around the hip-joint; but on opening the capsule, small effusions of blood, apparently not recent, were discovered beneath the synovial and fibrous membrane, covering the neck of the femur, also

beneath the synovial membrane covering the ligamentum teres. The head and neck of the bone were sawed through their middle, and in each portion a dark line, evidently occasioned by the effusion of blood, was seen extending through the bone at the basis of the neck. A fracture was discovered extending along this line; but the broken surfaces were in contact, and the synovial and fibrous membrane covering the neck of the bone was uninjured.

In this case, if an attempt had been made to walk at the end of two or even three weeks from the accident, a separation of the fractured surfaces and consequent shortening of the limb would have been the result. Hence, in cases where the nature of the injury is doubtful, we may infer the obvious propriety of imposing on the patient a strict confinement to his bed for as great a length of time as if the fracture had been ascertained. Another obvious inference is, the necessity of a minute attention to the circumstances under which the accident occurred; these, in the absence of all clear and decisive indications of the nature of the injury, being often our only guides.

THE PARTICULARS

OF

A CASE

OF

FRACTURE OF THE NECK OF THE FEMUR.

BY

DR. BRULATOUR,

SURGEON TO THE HOSPITAL AT BOURDEAUX, ETC. ETC.

Read June 5, 1827.

DR. JAMES, an English physician, forty-seven years of age, in good health, was thrown from his horse on the 20th of March, 1826. He fell directly upon the right great trochanter, but got up and walked a step or two, which occasioned such acute pain in the hip-joint, that he instantly fell again.

On examination, immediately after the accident, Dr. Brulatour observed the principal signs of fracture of the neck of the femur, such as shortening of the affected limb, turning outwards of the foot,

and a feeling of crepitation in the joint when counter-extension was made.

During the treatment of the case, the patient was confined to his bed for two months, and for the whole of that period counter-extension was constantly kept up, so as to preserve the limb of its natural length.

On the 20th of May the splints and bandages were all taken off; and on the 30th the patient got up, and with the assistance of crutches walked a little in the room. On the 20th of June the crutches were put aside, and he walked with only the assistance of a cane. In August he was able to walk without any assistance, and subsequently he recovered the full use of the limb.

Dr. James continued very well till the 20th of December, when a violent attack of hæmatemesis came on. The measures employed had no effect in restraining the disease, and on the 22d, two days after the attack, Dr. James died, at ten o'clock in the morning.

The body was examined on the 23d at eight in the morning, in the presence of Dr. Tindal, Drs. Brulatour, senior and junior, and several medical pupils. The part more particularly examined was the right coxo-femoral articulation. And here were observed,

1. The capsule a little thickened.

2. The cotyloid cavity sound.

3. The inter-articular ligament in a natural state.

4. The neck of the femur shortened; from the bottom of the head to the top of the great trochanter was only four lines, and from the same point to the top of the small trochanter six lines.

5. An unequal line surrounded the neck, denoting the direction of the fracture.

6. At the bottom of the head of the femur, and at the external and posterior part, considerable bony deposit had taken place. A section of the bone was made in a line drawn from the centre of the head of the femur to the bottom of the great trochanter, so as perfectly to expose the callus. The line of bone indicated by the callus was smooth and polished as ivory. The line of callus denoted also that the bottom of the head of the femur had been broken at its superior and posterior part.

ON

PARAPLEGIA.

BY

H. EARLE, Esq. F.R.S.

SURGEON TO ST. BARTHOLOMEW'S HOSPITAL, ETC. ETC.

Read June 19, 1827.

UNDER the title of Paraplegia I wish to be understood to include that species of palsy in which both sides of the body are affected, in contra-distinction to hemiplegia, where only one side is deprived of sensation or motion, or both. The term paraplegia frequently occurs in the writings of the ancients, and has been employed by different authors in various senses, but by none exactly in the acceptation I have just defined. — Thus Hippocrates denominates all paralytic affections occurring after apoplexy, paraplegiæ. Aretæus uses the word to denote a remission of sensation or motion in some one particular part. Boerhaave says paraplegia is a palsy of all parts below the neck. Van Sweeten gives a similar definition. More modern authors confine it to paralytic affections of the lower half of the body. Now as far as my observations have enabled me to judge, none of these definitions are strictly correct, as the

affection may be confined to the feet and ankles without extending higher up the lower limbs, while in the same individual there may be a similar affection of both hands. It will, I conceive, meet every variety of case which occurs, if we define paraplegia to be a paralytic affection of both sides of the body, whether that be partial or general, in opposition to hemiplegia, in which the affection is confined to one side.

Paraplegia has generally been considered as dependent on some morbid action existing in the vertebræ or spinal canal, and producing more or less pressure on the spinal marrow, especially in the lumbar region; and no doubt many instances occur where the seat of the disease is in some part of the spinal marrow, or its membranes. But symptoms very closely resembling those produced by morbid affections of the spinal marrow, will occasionally be found to take place in chronic diseases of the brain and its membranes. This form of paraplegia dependent on some morbid alteration of structure in the encephalon, does not appear to have been particularly mentioned by authors on diseases of the spine.

In August 1814, I addressed some observations in reply to a review of Mr. Baynton's works, which were published in the Edinburgh Medical and Surgical Journal for January 1815. In the course of my remarks I adverted to this affec-

tion, and related the particulars of some cases, with the appearances on dissection. In these instances both spinal marrow and brain were examined, having been led to investigate the latter from the absence of disease in the former parts.

In the sixth volume of the Transactions of the College of Physicians, published in the year 1820, there is a valuable paper by the late Dr. Baillie, entitled "Some Observations on Paraplegia in Adults." In this paper he states his belief that this form of paralytic affection had considerably increased in this country, although he could not assign any reason for it. He further states, that "in adults, when the spine has not suffered from outward violence, paraplegia most commonly depends on a disease of the brain itself." This assertion is hardly warranted by any direct proof adduced by the author in the paper in question, as only one dissection is given where there was extensive effusion in the membranes and ventricles. It is true, that in some additional observations published in Mr. Wardrop's edition, he states "Besides the account of the dissection published in my former paper, I have heard, from the most undoubted authorities, of one case where tumours were found in the brain, and of another where a large quantity of water was found in the ventricles of the brain, together with some in the theca vertebralis. To these" he says, "I may add a third case, on the best authority, in which

many of the arteries of the brain were found ossified, and a large quantity of water effused between the membranes and the brain."

From a long conversation which I had with the author in the beginning of the year 1822, I have strong grounds for presuming that these latter observations, which bear date April 1822, were partly in reference to some cases and dissections which I named to the Doctor, as he at that time distinctly avowed that his belief in the seat of these affections being in the brain did not rest on any additional anatomical facts, but was the result of his own reason. He was not aware, before that conversation, that I had published the dissections above alluded to, illustrative of this point, and appeared much pleased to find that I had confirmed the opinions he had advanced, by actual examination of the brain and spinal marrow.

It is not then without good reason that I venture to call in question the propriety of assuming it as an axiom, that "paraplegia in adults most commonly depends on disease of the brain." I admit that it is an occasional and not unfrequent cause, and further I admit that where such a train of cerebral symptoms exist as are described by Dr. Baillie, we should probably not err in referring the mischief to the head; yet I feel confident that the conclusion is too general, and would therefore warn practitioners against too hasty an adoption of it, as no

doubt many instances occur in adults, wholly dependent on diseases affecting the spinal marrow. The subject is one of much interest and often involved in obscurity, requiring the most minute attention to every particular, more especially when the more manifest symptoms of cerebral affection are absent. Having for several years directed my attention particularly to affections of the brain and spine, it may not be unacceptable to the members of this Society to present them with the result of my inquiries, illustrated with some original cases and dissections.

Although in many of these diseases it may not be possible to form a very correct opinion during life, yet there are many circumstances which, if closely attended to, will enable us to form a tolerably correct prognosis.

Paraplegia dependent on the existence of disease in the brain, generally occurs at the middle or more advanced period of life than is usual in diseases of the bodies of the vertebræ, or their intervening fibro-cartilages. Its progress is more rapid than the slow insidious approach of symptoms from the latter diseases; the affection is more general, occasioning more or less paralysis of the upper and lower extremities, and this will often take place in a very few days from the occurrence of the complaint. This disease happens much more frequently in men than women. The gait of persons suffering from cerebral affection is peculiar, and

very different from that attendant on affections of the spine. It very nearly resembles the vacillating steps of a drunkard.—Such paralytic persons are incapable of walking in a direct line; the limbs are loose, and thrown forward with an exertion of the whole body; there is a great consciousness of feebleness in walking, and the greatest difficulty in turning round. The appearance of the eyes often much resembles those of a drunkard, particularly when the patient is at all excited or anxious. The above analogy to the staggering steps of intoxication is readily understood, if we consider that it is the temporary disturbance of the brain, from the congestion of its blood-vessels, that deprives the drunkard of the power of directing his steps, and for the time induces a state bearing the closest resemblance to paraplegia.

Sensation is more impaired than in spinal affections, when it will often remain perfect after a total loss of the locomotive powers. This impaired sensation is often peculiar, imparting an idea of some foreign body, as a leather glove or stocking being interposed. The patient appears to feel, if I may use the expression, through a false medium; the limbs are more wasted and flabby, without any spasmodic rigidity of the muscles, which so often occurs in affections of the spine. Although often accompanied with a torpid state of the bowels, aggravated no doubt by the impaired muscular power of the abdominal parietes, there has not, in

any instance that I have witnessed, been any train of gastric symptoms similar to those which so constantly attend affections of the spine, especially of the dorsal region. In some instances there is the additional confirmation of an impaired state of some of the external senses, accompanied with vertigo, a sense of weight on the head, and a general disturbance of the cerebral functions. As disease advances, the power of the brain in transmitting its influence to the extremities becomes more and more circumscribed. — Thus I have known a tubercular affection of the pia mater, in the first instance, cause a numbness and loss of feeling in the feet, which has gradually extended until all four extremities were completely paralysed, and the muscles concerned in respiration at length refusing their office, death ensued.

A very similar train of symptoms occurs in other diseases of the brain, particularly in cases of extensive membranous effusion from chronic inflammation, or effusion into the ventricles. In a case of Fungus Hæmatodes which I published in the third volume of the Society's Transactions, the same effect was produced, and I have since met with numerous cases of scrofulous tubercles in the substance of the brain, where the same phenomena were slowly induced, until suppuration has taken place, or the neighbouring membranes have become inflamed, when a fatal termination has rapidly ensued.

Whenever disease has proceeded so far as has been above described, one or more of the mental faculties has, in almost every instance, suffered, and no reasonable doubt can in such cases be entertained respecting the real seat of the disease. It is in slighter and more chronic cases that it is often difficult to form a correct opinion, yet to establish a correct diagnosis in such cases is of the utmost importance, both with respect to the prognosis we should form of the probable termination of the case, and with reference to the proper treatment to be adopted, that we may not subject the individuals to useless suffering from the application of caustic issues and setons to the spine, and the disappointment which would follow from their obvious inutility in such instances. In several of these cases, attention to the following circumstance has materially assisted me in forming a correct judgment; I am therefore induced to lay considerable stress upon it, although to some persons the opinion drawn from it may appear somewhat speculative.

It is well known that when a nerve is stimulated or injured in any part of its course, the painful sensation is referred by the percipient mind to the sentient extremity of such nerve; the familiar instance of the pain referred to the extremity of an amputated limb, may be adduced in proof of this. The exact reverse of this takes place when there is a partial paralysis arising from morbid

affection of the cerebral organs. Here the centre of the sensorial functions being impaired, it appears to be incapable of transmitting its influence to the extreme parts of the body, and thus the feet and hands gradually lose their sensation or power of motion, or both; and in such cases if the nerves supplying the limbs be irritated, *they will convey the impression of such injury only part of the distance down the limb, about as far as the commencement of the paralytic affection.* I have repeatedly examined cases of paraplegia from affection of the spine, and in no one instance have met with the same phenomenon, which I have therefore been induced to consider as diagnostic of the paralytic affection being dependent on disease of the brain or its membranes; which opinion has in several instances been confirmed by examinations after death, in which both brain and spinal marrow have been carefully investigated.

A fertile source of error relative to the seat of disease in cases of paraplegia, arises from the incurvated state of the spine, which frequently takes place in paralytic affections from morbid alterations of structure or pressure on the brain. When this exists it tends much to confirm the suspicion of the disease being in the spine, and many cases are treated on such supposition with issues and setons, to the great discredit of these remedies. The blame, however, ought not to attach to the remedy, but to its misapplication; the fault consists in pre-

scribing for a symptom without sufficiently investigating its cause. It is true that in these cases the spine is much curved, but it differs materially from the angular curve produced by disease of the bodies of the vertebræ, *which is always more or less defined*. On the contrary, in these cases the whole spine is curved in the form of a half-hoop, in consequence of the debility of the muscles of the back, which are no longer capable of sustaining the weight of the trunk and viscera, and maintaining the erect posture. This is the state in which we frequently see weakly children during dentition, and it not unfrequently happens, that it is in them mistaken for affection of the spine, more especially if they have previously been able to move about and use their limbs.

The test by which I have been in the habit of trying these cases is at once simple and satisfactory. If a person with such a stooping or incurvated state of the spine be placed on a horizontal plane, the back will immediately and spontaneously be restored to its proper form without causing any pain or distressing symptoms, which would certainly be produced by any attempt at extension of a diseased spine. The state of the back in these cases is similar to what occurs during sleep or after death. It takes the direction influenced by the gravitation of the viscera and upper part of the body; for be it remembered that the strength of the spine and of most other joints depends on the

power of the muscles: this is readily shown by dividing the tendons which pass over a joint, which will immediately become pliant and flexible. The same occurs in acute rheumatism, when the muscles are no longer under the control of the will, and the joints are consequently loose and powerless.

Paraplegia in adults is no doubt often produced by chronic membranous inflammation of the brain and spinal marrow conjoined, in which cases we find after death more effusion than natural in the upper part of the spinal sheath, in addition to effusion into the cellular tissue of the pia mater and ventricles of the brain.

Several such cases have been traced to long exposure to damp and cold, from lying in the open field, or in boats exposed to inclement weather. From these sources, I have known several officers and soldiers become more or less afflicted with paraplegia. Habitual intemperance has in other instances produced the same effect. Patients will often survive many years under such circumstances, and on examination after death, in addition to disease in the brain, more or less effusion into and chronic thickening of the membranes of the spinal marrow will be found. In such cases, I have remarked during life that the limbs have been more rigid, particularly the flexor muscles, than when the affection has been confined to the head.

Frequent and attentive observation of the spinal marrow and brain, connected with a minute and faithful record of the phenomena presented during life, will it is hoped clear up many of the obscurities which, it must be acknowledged, still envelope this interesting subject, on which it may be truly said, "multum adhuc restat operis," and it may be added, "et multum restabit."

With a view to contribute towards this desirable object, I shall subjoin cases and dissections illustrating some of the positions I have advanced. In the first place I shall mention some cases of paraplegia dependent on cerebral affection alone. I shall next contrast these with paralysis from disease of spine, and lastly I shall give the narrative of some cases where disease existed in the same individuals in both brain and spinal marrow. With respect to the first class of cases, I am well aware that in many instances similar and even more extensive morbid alterations of structure have been found in the brain, without any symptoms having existed during life to lead to a supposition of such disease.

There is perhaps no part of the body which exhibits greater variety of symptoms under disease than the brain. At one time we have a fatal termination from membranous inflammation, and so slight a degree of effusion as almost to elude the researches of the anatomist; whilst at another we

have immense effusion of water in the ventricles and entire surface, or even extensive abscesses in the substance of the brain wholly unsuspected during life. These discrepancies will perhaps occasionally admit of being reconciled; but this is not the object of the present paper, which has reference more particularly to cases where there have been manifest symptoms of impaired nervous power during life.

In addition to the instances I have already recorded in the Edinburgh Journal and the Transactions of this Society, I have selected a few marked cases from my note book.

CASE

OF PARAPLEGIA FROM DISEASE OF BRAIN.

A gentleman, aged thirty, who had suffered from scrofulous affection of the testicle and inguinal glands which had suppurated, complained of very intense pain in the head after exercise on a hot day. He had frequently suffered from headache, which was supposed to be connected with a very dyspeptic state of stomach, and studious sedentary habits. The pain was so intense and of such duration, that I advised him to lose blood by cupping, which afforded some alleviation, but he never entirely lost a sense of more or less uneasiness and weight in the head. After some days he com-

plained of a stiffness in his feet and ankles, and he tripped in walking. In about a week he had similar feelings in his hands, and he could with difficulty direct a pen. It now became apparent that serious mischief was going on in the brain, and very active measures were resorted to, but without avail. The paralytic affection extended up the lower extremities, so that he could only advance a step by throwing his limbs forward with an exertion of the whole body. Sensation was much impaired half way up his legs, and his extremities were cold and clammy. His upper extremities never entirely lost their motive powers, but he could with great difficulty feed himself, and his grasp was hardly to be felt. He could not distinguish the temperature or properties of any substance felt with his fingers, and on stimulating the median and ulnar nerves, he was not sensible of any pain much below the elbow. He had long complained of muscæ volitantes, and his sight now became permanently misty and imperfect. He had tinnitus aurium, and his memory and power of reasoning failed gradually. In about six weeks from the attack of severe pain in the head, he had two convulsion fits which left him deprived of consciousness for many hours. By active treatment, he was for a time roused, but in a few days became comatose and died.

On examination, the vessels of the dura and pia mater were very turgid—the convolutions on the

apex much flattened; about five ounces of limpid fluid were found in the ventricles. A thick layer of yellowish lymph covered the pons varolii and optic nerves. The whole pia mater was studded with small tubercles like millet seeds; these were particularly abundant on the middle lobe and basis of the brain. The cervical portion of the medulla spinalis was examined, but no disease detected, except a slight increase of fluid in the theca; but it is probable that this flowed down from the ventricles in making the dissection of the brain. The peritoneal covering of the intestines had similar small tubercles beneath it, projecting towards the muscular coat. The mesenteric glands were enlarged, and some contained scrofulous matter. The lower part of the spinal marrow was not examined.

CASE

OF ANÆSTHESIA FROM DISEASED BRAIN.

A young woman complained of impaired sensation in her hands, after sudden suppression of menstruation. It was accompanied with a flushed countenance and much pain in the head. She was bled largely which relieved the head, but she never recovered the proper sensibility in her fingers, which were affected with anæsthesia, the muscular powers remaining perfect. Her feet and legs were always remarkably cold; she passed her urine with-

out consciousness at night, and she had very slight control over it during the day. She lived in this state between two and three years, at the expiration of which time she had a fit which left her hemiplegic on the right side. In about six weeks she had a second fit from which she did not recover.

On dissection much gelatinous deposit was found towards the basis of the cranium between the layers of the arachnoid, and the cellular tissue of the pia mater was loaded with fluid. Three scrofulous tubercles were found in the substance of the cerebrum, and one in the left lobe of the cerebellum which had suppurated. The surrounding medullary matter was unusually soft and pulpy. In the chest the lungs were found much diseased with very numerous tubercles. The cancellous structure of the bodies of the vertebræ was filled with cheesy deposit, and they could be easily cut with a knife; but no perceptible change had taken place in the spinal marrow and its membranes.

CASE

OF PARAPLEGIA AFTER SLIGHT CONCUSSION.

Major L. ætat. 38, an active, robust, healthy man, in November, 1824, was thrown from his horse in leaping a double-fence, near Canterbury;

he fell on his back on a hard road, quite flat. He was slightly stunned for a few minutes, but soon recovered, shook himself, and rode on. He thought nothing of the accident, and took no kind of precaution as to medicine or diet, and lost no blood. About six weeks after this occurrence he was exposed to cold and wet in a shooting party, and on the same day, 18th January, 1825, he first found a slight difficulty in deglutition, and he could not close his teeth with sufficient force to divide his meat (some tender venison) which led him to suppose it tough. He applied the following day to the surgeon of the regiment, who treated him for a common sore throat and cold. The difficulty increased the following day, and he now perceived a thickness and peculiarity in his speech, which made it difficult for him to be understood. On the 23d he first felt a numbness about his feet, and a sense of weakness in his legs, which impeded his walking, particularly in going up and down stairs. This latter symptom rapidly increased from day to day, extending higher up the limbs, until the whole of the lower half of the body was paralysed. His arms also now became affected, and he was unable to assist himself in turning, and could not grasp any body to make any sensible impression. He was bled once, but the heart's action was so enfeebled that it was not deemed prudent to repeat this. The case was considered as an affection of the lumbar spine, and blisters and mustard poultices were extensively employed: ammonia and

infus. armor. comp. and other stimulants, were given internally. He continued, however, to get rather worse than better, and was brought up to London from Canterbury, and placed under my care.

I was first called to him on the night of the 8d of February, and found him in a most deplorable state after the fatigue of the journey. His lower extremities were completely palsied, he not having the slightest power of varying their position. The muscles were flabby, and much diminished in bulk; his bladder and rectum were paralysed; the muscles of the loins and abdomen were nearly powerless, so that he had no power of supporting himself in a chair; his hands were so feeble, that he could not hold or direct a pen, and when he attempted to shake mine, I could scarcely distinguish his utmost degree of pressure. On cross-questioning him respecting his head, he said he never had pain in it, but acknowledged that he occasionally felt giddiness, and his sight was so far impaired, that he could not see to read above two or three lines without the whole becoming confused. On looking up, and throwing his head at all back, he also felt a peculiar sensation in the head and upper part of the neck. His speech resembled a person with bad venereal affection at the upper part of the soft palate and fauces. His power of deglutition was so much affected, that he was some minutes in getting down a single spoonful of fluid; if he attempted to swallow faster, it returned through his nose; solids

he could not swallow at all. His pulse was exceedingly small and contracted, slow and labouring, as if the heart's action was influenced by the general paralysis, and his respiration was feeble and difficult. He was a good deal distressed by a secretion of mucus, which collected in his throat, and which he could with great difficulty raise. One great source of distress, and which disturbed his rest at night, was the constant painful weariness in his limbs and loins, which required his position to be very frequently varied, and from his being a heavy stout man, this was rather difficult to accomplish. This pain appeared to depend on the great pressure the integuments sustained in consequence of the total paralysis of the muscles, which afforded no elasticity or resistance to the continued dead weight of the limbs. It was much increased also, at the time of my first seeing him, by the very tender state of the loins and nates, which were in a state of ulceration from the blisters and mustard cataplasms. Sensation in the integuments of his limbs was rendered morbidly acute; at the same time that it was not correct, giving a sensation of leather intervening.

On viewing all the circumstances of this truly distressing case, I was led to conceive that the seat of the mischief was in the head, and that there was actual inflammatory action of the membranes at the basis of the brain, and medulla oblongata. Cupping glasses were applied behind the ears, and about ten ounces of blood removed. After

the removal of the blood the pulse improved, became fuller and more distinct. Considering that there was certain evidence of disease in the head, the treatment consisted in repeated small bleedings from behind the ears and nape of the neck, with antiphlogistic diet and mild aperients. He was placed on one of my double-inclined beds, which allowed his position to be varied without much difficulty, and enabled him to pass his fæces, &c. I directed that his limbs should be gently rubbed, and passive motion given to all his joints daily. The first symptom of amendment was the return of power in the bladder and rectum, except when he took active aperients. The extreme restlessness and distress from lying next abated; in the space of a few weeks he was able to move his toes occasionally, but they were not obedient to his will at all times. A seton was made in the nape of the neck, and kept actively open with stimulating dressings. His progress was very slow, but uniform; his speech and power of deglutition were restored in about six weeks; his arms next acquired strength. He was then able to move himself round in the bed, and the muscles of his loins became stronger, so that he could sit up in his chair. His lower limbs became more firm and muscular, their bulk increased, and by degrees he could move his ankles, and next his knees. After several months the seton was closed, and conceiving that the spinal marrow participated in the mischief, long strips of blisters were placed down the spine. At

one time, when he appeared rather at a stand, strong camphorated mercurial ointment was rubbed in down the spine. This soon affected his constitution, inducing languor and increased debility, with rather a wasting of flesh; it was discontinued, and he immediately made more rapid strides. The mercury was evidently of use in exciting the absorbents, although it disordered his general health. At another time, galvanism was tried for a short time, but it appeared to excite too much, and to cause a sense of weight and giddiness in the head. He continued gradually to gain ground, and after some months, with the assistance of a sort of large go-cart, which supported him under the arms, he was able to throw his limbs forward, and make some progress in walking. Still however the muscles, which connect the pelvis with the lower extremities were for a long time not sufficiently strong to sustain the whole weight of the body.

I have lately (May, 1827) received a letter from him, stating that he is in perfect health, and able to walk with the assistance of crutches, and to stand upright without any support. I entertain no doubt of his ultimate and perfect recovery, for which it is but justice to add, he is in great measure indebted to his steady perseverance in the means which were recommended, and especially to his own even temper and well-regulated mind. Never during a long and necessarily tedious attendance, did a murmur escape his lips at the pri-

vations he was subjected to, and the pain he daily suffered. He always received me with cheerfulness and most gratifying confidence. He had early made up his mind to the worst, and every advancement, however minute, afforded him fresh grounds for gratitude and hope.

Independently of any interest, which it was impossible not to take in such a patient, the case afforded much matter for speculation. The early progress of the paralytic affection, commencing with the powers of mastication and deglutition, previously to the limbs participating, coupled with the manifest affection of the sight, giddiness, &c. which has been above stated, clearly pointed out the seat of the mischief to be in the brain and medulla oblongata. The treatment pursued was very simple, consisting in repeated small bleedings, with a view to keep the vessels of the head empty; active counter irritation in the nape of the neck; a strictly regulated diet, and attention to the digestive organs.

I have another case at present under treatment, in which there cannot, I think, be any reasonable doubt of the brain being the seat of disease. The following are the particulars of the case, extracted from my note book.

CASE

OF PARAPLEGIA FOLLOWING CONCUSSION OF THE BRAIN.

Richard Dovey, ætat. 28, a carpenter by trade, was admitted into St. Bartholomew's Hospital, May 27th, 1826, with paraplegia affecting his lower extremities, bladder, and rectum. He had been previously in the Westminster Hospital, where issues were made in the loins, from which he had not derived any benefit. He had been into the country for his health from the period of his quitting the Westminster Hospital.

At the time of his admission his walk was very peculiar, resembling a drunken man. He could not direct his steps, could not turn without holding something, and at times his knees failed him so completely that he fell. I examined him naked, but could find no disease about the spine. The appearance of his eyes was peculiar, which, with other circumstances, led me to suspect that the disease was in the brain. On questioning him about any sense of giddiness, or pain in his head, he did not *at that time* complain, and stated nothing respecting any former injury. Still, however, the peculiarity of his gait, the appearance of his eyes, and the numbness he felt in the integuments of the lower half of the body, induced me to refer the complaint to the head. He was ordered to be

cupped behind the ear, and a seton was made in the nape of his neck. His bowels were regulated with blue pill and compound colocynth extract. Under this treatment he evidently improved.

Some weeks after his admission, I cross-questioned him very particularly as to the commencement of the complaint, and whether he had ever sustained any injury in the head. It now appeared that he had received a severe blow on the left temple, in October, 1825, which stunned him for some minutes. He took no precautions after this injury, and sought no advice. About two months after this he first felt a stiffness in his feet and ankles, which gradually increased upwards as high as his loins. His sensation became impaired, conveying a feeling of leather being interposed. His feet and legs were cold, particularly his right leg, which he dragged more than the left. He had much difficulty in discharging his urine and fæces, et in venerem minime habilis fuit. He had repeatedly fallen from the failure in his knees, and had occasionally lost all consciousness. He recollected having suffered a good deal with frequent pain in his head after the blow, but he heeded it not, and continued to work on. His sight was evidently affected when he attempted to fix his attention to any object for some minutes. The right side was more affected than the left. Repeated small bleedings from the temples, and an active seton, constituted his principal treatment, combined with low diet and mild aperient medi-

cine. Under this plan he slowly improved. At one time tartar emetic ointment was rubbed into the scalp, which produced a copious crop of pustules. This appeared to expedite his recovery at first, but on repeating it, after some interval, it produced so much general febrile excitement that it was desisted from. He continued slowly, but steadily, to advance in the increasing firmness in his step, and in regaining his proper feeling, until December, 1826, when he had a severe attack of dysentery, which greatly reduced him. He is at the present time (May, 1827) still an inmate in the Hospital. His feeling is now nearly natural, and he can direct his steps in a straight line, and is now quite free from all feeling of pain or giddiness in his head.

The following may be considered as a case of cerebral derangement producing impaired muscular action in the inferior extremities:—

William Blakèy, æt. 15, was admitted into St. Bartholomew's Hospital July 20, 1826, on account of a paralytic affection of the lower extremities.

About five years ago the operation for cataract was performed on both eyes, the vision of which had been impaired from birth. Inflammation followed the operation in the right eye, which was destroyed. Vision remained nearly perfect (and much better than it had ever been before the operation) in the other eye for a year, when that

also became affected with inflammation, and in a month subsequent, notwithstanding active remedies were employed, vision was completely lost. During this time he had great pain in the head, to which he has been subject ever since. For some time previous to last December the head-ache had increased, and his lower limbs now became very weak. He complained of shooting pain in them when he endeavoured to walk, and his legs were involuntarily drawn across each other. These symptoms have been gradually increasing in severity up to the present time (July). He has now so little power over the motion of the lower limbs, that he is unable to walk or stand upright without danger of falling, his knees involuntarily bending under him, and his feet crossing each other. He complains of great pain and heaviness in his head; his tongue is white and coated; bowels constipated, and their secretions of a bad description; and there is a degree of irritability and fulness of pulse. The head was shaved, cold lotions applied, and leeches to the temples; calomel and jalap were given to regulate the bowels.

July 28.—The tartar emetic ointment was rubbed over the whole scalp, and it brought out a full crop of pustules; it occasioned much constitutional disturbance and fever. He also took Pil. Hyd. gr. iij. Rhei gr. ij. omni nocte.

August 16.—The symptoms were somewhat re-

lieved, the head-ache was less, and the power of the limbs increased. The ointment was again applied, followed by large pustules, which ulcerated.

30th.—There was some improvement, but he still complained of great pain in the head; the bowels were indolent, and the secretions depraved; his pulse was still irritable and full. He now took Pil. Hydrarg., Ext. Coloc. c. ā gr. v. omni nocte, and leeches were applied repeatedly to his temples.

September 9.—There was now a very marked benefit. His head was much less painful; he could walk alone tolerably well; the pulse was more natural, and the bowels regular, &c. The repeated use of the leeches was continued, and he is now (October 12) quite free from head-ache. His health and appearance are much improved, the power of the limbs is considerably increased, and he now walks tolerably firm and steady.

He quitted the hospital soon after this report was drawn up by the gentleman who attended him, and after being absent about six weeks experienced a return of pain in the head, accompanied with similar failure in his limbs. This was again relieved by repeated small bleedings from the head.

I shall next, by way of contrast, select a case of

palsy from chronic affection of the spine, which proved fatal, and was minutely investigated after death. This case was particularly interesting to me, from the various opinions and conjectures which were formed during life.

CASE

OF PARAPLEGIA FROM DISEASE OF THE SPINE.

Mr. R. P. a very corpulent, but active, healthy man, aged sixty-six, was thrown from his horse in Gray's-Inn Lane, and struck his sacrum against the pavement. He experienced very slight pain or inconvenience at the time, and paid no attention to himself. Many months after, he felt a difficulty in throwing his leg over his horse in mounting, and about the same time he was apt to trip against any slight inequality of ground, from his inability to raise his feet and measure distances correctly. This tripping and failure in his legs slowly but regularly increased until the motive powers were entirely lost in the lower extremities. Considering the case as connected with the fall, the loins were cupped and freely blistered; the blistering caused much irritation in the surrounding integuments, and a succession of painful boils formed, to the number of forty or fifty, many of which deserved the name of anthrax, and required to be freely opened to give exit to the sloughs.

Warm sea-bathing and friction were next resorted to, but without benefit. The paralytic affection continued slowly to advance upwards, the muscles of the abdomen and thorax, and latterly those of the upper extremities, lost their power, and became flabby and wasted. For some time after the extensor muscles had lost their power of action, the flexor muscles were obedient to the will. The bladder and rectum were not at all paralysed, except latterly, when purgative medicine was given, at which times he could not always command his sphincter ani. His general health during the whole progress of the case, which occupied above two years, scarcely suffered. His head was clear and quite free from pain, his respiration free, and his digestive powers perfect. From the entire failure in his muscles and want of elasticity, he suffered much latterly from the weight of his body and limbs, often requiring change of posture. Sensation was perfect to the last, even to the extreme points of his toes. He gradually became more feeble, and at length the muscles concerned in respiration failing, he was unable to speak except in the lowest whisper. He appeared to die from the want of muscular power to draw in his breath. To the last ten minutes of his existence, (and he breathed his last in my presence,) his intellect was perfect; not a single faculty, except that of speech, was impaired. During his long illness various medical men were consulted, and the general impression on the minds of his physicians

was, that this was one of the cases described by Dr. Baillie.

From the total absence of all evidence of affection of the head, from the sensation remaining perfect to the last, from the very gradual progress from below upwards, and from the known fact of his having received a severe jar at the lower part of the spine, I was induced to entertain throughout an opposite opinion, and was led to refer the mischief entirely to the spine. Permission was granted by the family to institute an examination of the spine and the rest of the body, of which I gladly availed myself.

Appearances found on Dissection of Mr. R. P.

The viscera of the chest and abdomen were all healthy. The bodies of the last two lumbar vertebræ were unusually prominent, and their intervening fibro-cartilages were broader and more prominent than usual. Several of the lower dorsal vertebræ were connected together by bridges of newly formed bone, passing from the edge of one body to that of the contiguous vertebra, particularly at the sides of the bodies near the transverse processes. This affection has been described by Poupart, who says "Une végétation osseuse se forme sur le corps même des vertèbres, comme une espêce de fourreau qui les lie et les soude ensemble ainsi qu'un vieil arbre prend une nouvelle écorce."—It is an affection not uncommonly met

with in the horse. On sawing open the vertebral canal, considerable bloody effusion and great congestion of vessels was found exterior to the membranes, between them and the bony canal. Ulceration of the posterior surfaces of the bodies had commenced at several points in the lumbar and dorsal spine, at which parts the posterior longitudinal ligament was absorbed, and a thick yellowish deposit covered the ulcerated parts. On slitting up the dura mater rather more fluid than natural escaped, and the pia mater was very vascular. The medulla spinalis itself was unusually hard. On making a section of the bodies of the vertebræ and their cartilages, the cellular structure of the bodies was much condensed, and they exhibited a very unusually dark appearance. When cut open, they resisted a very strong scalpel, which could not be made to penetrate in the least. The ulceration had in places extended to some depth. The intervening fibro-cartilages were totally altered in structure, having lost all elasticity, and much resembled rotten leather in colour and appearance. This appearance extended more or less through all the lumbar and dorsal spine. In the head a small quantity of fluid was found in the ventricles, perhaps not more than natural. In the basis of the brain the arachnoid had a slight milky appearance, and there was considerable venous congestion in the cerebellum. From the appearances exhibited by this examination, there cannot be a reasonable doubt that the paralytic

affection was referrible to the effects of chronic inflammation in the spine, which principally caused a morbid alteration of structure in the bodies of the vertebræ and their cartilages; the affection of the spinal marrow and its membranes being most probably dependent on the inflammatory action going on in the contiguous parts.

This case affords an interesting illustration of the progress of chronic disease of the spine; and the dissection offered a most satisfactory explanation of the phenomena which occurred during life. It forms a complete contrast to the cases of paraplegia from affection of the brain. As it is my intention at some future time to publish some remarks on diseases of the spine and spinal marrow, I shall not now give any further illustration of affection of the spine alone; but shall conclude with some cases in which disease occurred in the brain and spinal marrow, in some of which the symptoms depending on the different parts affected were well marked.

CASES

OF DISEASED SPINE AND BRAIN.

H. S. aged 16, had enjoyed good health until February, 1816, when he was seized with giddiness, temporary loss of sight, and great tremor of the

head, accompanied with severe pain. At the commencement of the attack every object appeared as red as blood. In a few days he perceived his right foot and leg to be benumbed, and he had much difficulty in moving them. He gradually recovered the use of the limb, and was able to walk about, but was liable to occasional fits, and once fell in the street, and remained in a state of insensibility for some time. On recovering he found that the sight of his right eye was much impaired, being hardly able to discern light from darkness. He consulted an eminent oculist, who ordered electricity, which aggravated the pain in his head, and increased the dimness of vision. Subsequently to this seizure he had experienced many slighter attacks, which increased in frequency to the time of his consulting me, in the month of November, 1816. At that time he rarely passed a night without being suddenly awakened from his sleep, screaming and in great alarm, with violent spasmodic contractions of the muscles of the back of the neck, causing a retraction of the head, almost similar to opisthotonos. Occasionally during the day he had similar affections. He was very drowsy, much distressed with tinnitus aurium, and complained of constant weariness. The pupils of both eyes were much dilated, that of the right permanently. His neck was constantly stiff and rather awry. He walked with great caution and some difficulty, and was much afraid of tripping, which jarred his head, and brought on spasms in the muscles. His general

health was much impaired, his pulse full and frequent, countenance flushed and expressive of great anxiety, tongue furred, and bowels costive. His speech was affected with a stutter when he attempted to speak fast, but when not hurried or alarmed it was distinct. His mental faculties were not impaired, with the exception of his memory of localities, which caused him to forget in a few minutes where he had placed any thing; a circumstance which was remarked in consequence of his business, that of a pawnbroker, requiring the especial exercise of this faculty. His recollection with regard to circumstances and facts was unimpaired, and he gave a very clear account of the origin and progress of complaint.

From this history it was very clear that there was disease in the brain. He was repeatedly cupped from the head, and applied cold washes. His bowels were freely opened with calomel and jalap. He derived much benefit from this plan; the attacks became less severe, and not so frequent, and his head felt much lighter. The right eye remained amaurotic. A seton was made in his neck, and mercurial pills were ordered night and morning to affect the mouth. As soon as ptyalism was produced, the mist began to clear away from his eye. He was kept under the influence of mercury for six weeks, at the end of which time his sight was so far restored that he was able to read large print. He lost his nocturnal seizures, and felt himself free

from all complaint in the head. As he was much reduced in strength, he went into the country, and bore his journey to the neighbourhood of Coventry without suffering. His seton was still kept open. I heard from him soon after, when he expressed himself as rapidly regaining his strength, and feeling quite well, with the exception of a permanent rigidity of the muscles of the neck, causing the head to be awry. He had been in the country about three weeks, when he one day tripped, and fell in crossing a room. From this time he began to complain of pain in his right side and back, with cramps in his stomach, and his legs again failed him. He was removed to London, and I saw him early in July. The pain he described as shooting round in the course of the costal nerves, which being accompanied with pain in the præcordia, and irregular muscular action in the lower extremities, induced me to suspect that disease had commenced in the spine. On stripping him, my suspicions were confirmed by finding a curvature of the dorsal spine occupying about three vertebræ. The form of the chest was much altered, and his respiration was very difficult. His health was much deranged, bowels irregular, and his locomotive powers were greatly impaired. I ordered him to remain quiet, in a recumbent posture, and endeavoured to improve the state of his health. Issues were made on each side of the affected spine. He was much distressed with severe cramps in the muscles of his legs and thighs, and with pain in his side. After

some time his health rather improved, and he lost his cramps. He was occasionally attacked with diarrhœa, which greatly reduced him. The curvature in the back did not appear to increase, but the sixth and seventh ribs appeared to have fallen in, and he lost all power of using his intercostal muscles; below the eighth rib the arched form of the chest was preserved. Towards the close of this distressing case his breathing was so difficult that he could not articulate. On the 23d of December his sufferings terminated.

On examination the scalp was found remarkably vascular, the glandulæ Pacchioni much enlarged, and altered in structure. The arachnoid membrane milky, vessels in the pia mater very turgid with blood. A firm, almost cartilaginous tumour adhered to the membranes, which were condensed at the upper and anterior part of the right hemisphere, and penetrated to some depth in the substance of the brain. A similar tumour was found on the under side of the posterior lobe, and a very large one occupied about two-thirds of the right lobe of the cerebellum. The ventricles contained about twelve ounces of water. The right lung was universally adherent. A large abscess occupied the posterior mediastinum, at the bottom of which the bodies of two of the vertebræ were found nearly destroyed; several of the neighbouring vertebræ were soft, and the cancelli contained curdly matter. The ribs were very porous,

and could easily be cut with a common knife; four of them were separated from their attachment to the spine, and were ulcerated as far as their tubercles.

The history and progress of this case, coupled with the examination after death, was very interesting. The early symptoms were unequivocally produced by the disease in the brain, the progress of which was however suspended, and the symptoms relieved, by the measures which were pursued. The subsequent attack of scrofulous disease in the spine, was attended with all the usual symptoms which are known to accompany that affection. They were, however, quite distinct from those dependent on the primary cerebral disease, which never again manifested themselves, notwithstanding the existence of such very extensive mischief, the progress of which appeared to have been wholly suspended by the occurrence of the spinal affection.

Mary Phillips, aged 12, had been ill for two years. The first symptom remarked by her parents was a projection of the dorsal vertebræ, which took place very rapidly and without any accompanying affection of the spinal marrow. She was admitted into St. Bartholomew's under the care of Mr. Lawrence in the summer of 1825. Issues were made in the back, and she was discharged, as it was supposed, cured.

She was re-admitted in January, 1826, under my care, at which time her general health was much impaired, and she complained of a dragging of the right leg and frequent cramps in the flexor muscles. Rest and attention to her health greatly improved her at first, but she afterwards remained nearly stationary for some time, until she was attacked with fever, which was followed, whilst still maintaining the recumbent posture, by paraplegia affecting her lower extremities and bladder. Issues were again opened above and below the curvature in May, and her recovery from this time was very rapid. The use of her limbs was quite restored by the end of June, and at each visit she expressed herself as going on well and daily gaining strength. She was quite free from cough, her digestive functions were well performed, and she complained of no pain.

She continued thus until the 22d of August, when she had slight head-ache, which continued through that and the following day, and on the 24th, at six, p. m. she was suddenly seized with a fit much resembling hysteria, crying and screaming violently. On this state subsiding, she became quite torpid and insensible. When I saw her the following morning, she remained insensible, her eyes were half closed and conjunctiva very vascular, and her pupils were insensible to variations of light and shade; her pulse frequent and hard. She

was cupped largely, her head shaved and cold washes applied. A large blister was put on the nape of the neck, and five grains of calomel were ordered to be given every six hours. Her bowels had been moved with calomel and jalap, and the discharges were dark and offensive. The following day she was more sensible when roused, but was very impatient when touched. She knew me, and mentioned me by name. Leeches were applied to the temples, and the calomel was continued. On the Monday she had passed many greenish stools; her mouth appeared drawn to one side, but she could move all her limbs freely. She knew me when I spoke to her. Her mouth was evidently under the influence of mercury. She was ordered to desist from the calomel, and to take minute doses of sulphate of magnesia.

From the commencement of the attack I had predicted a fatal termination; and from having met with several similar cases, suspected that there were tubercles or some organic mischief in the head. She gradually sunk, and died on the Tuesday morning.

She was examined a few hours after death. In the head, a slight milky appearance was found on the surface of the arachnoid, and extensive effusion into the ventricles. The arachnoid and pia mater were much thickened and agglutinated where they

enter the ventricles at the foramen of Bichat. The fifth ventricle contained a turbid fluid. The infundibulum was much distended, and the brain was very thin and transparent at this part. The pineal gland was converted into a vascular bag, containing transparent fluid, and was larger than natural. In the basis, lymph was deposited between the arachnoid and pia mater on the middle lobes; and on attempting to remove these membranes, the substance of the brain was torn, and portions came away adhering to the membranes. It was very vascular at this part, and softer than natural. There was a similar deposit on the left lobe of the cerebellum. Three hard tubercles of the size of large peas were found in the left lobe of the cerebellum near its surface, and a similar tubercle of a larger size was found in the centre of the tuber annulare. On removing the spinous processes of the vertebræ, matter was found between the bony canal and its proper membranous lining in the dorsal region, and some slight adhesions existed between this membrane and the theca. A large abscess was found in the posterior mediastinum communicating with the diseased vertebræ, two of which were carious, with some loose detached pieces surrounded by matter. Not the slightest attempt at reparation had taken place. The lungs were adherent, but not otherwise diseased, and the viscera of the abdomen were healthy.

This case presents many very interesting cir-

cumstances for consideration. In the first place, it affords an illustration of the possibility of angular curve rapidly taking place from disease without inducing any affection of the spinal marrow. It proves the difficulty of deciding respecting the probability of cure when there are no nervous symptoms to guide the practitioner. Next, the occurrence of symptoms of affection of the spinal marrow coming on while the patient observed the strictest rest, and the ready subsidence of such affection under the use of active issues, notwithstanding it did not appear that any reparative efforts had been made. Lastly, the existence of so much disease in the brain, unaccompanied by any symptoms until within a few days of the fatal termination. The paraplegia which existed for a short time, had the usual characters of that affection, when induced by disease of the bodies of the vertebræ: there was no loss of sensation, and the loss of motion was not complete, the flexor muscles being affected with frequent spasms. Had this been connected with the state of disease in the brain, I conceive that the symptoms would not have yielded as they did.

This case affords a useful lesson in teaching us not to rely too much on our powers of discrimination, and is a powerful illustration of the extent to which, under some circumstances, disease will go on even in so important an organ as the brain, without causing the slightest disturbance of the functions of that part.

The facility with which the mouth was affected by the calomel was also deserving of notice, as it is in general very difficult to effect this under any acute disease of the brain, more particularly with children.

CASE

OF DISEASE OF SPINE, AND TUBERCLES IN THE BRAIN.

During the summer of 1821, I was requested to see a patient in Dr. Roberts's ward, who had suffered for a considerable time from fixed pain under the left breast, for which she had been leeched and blistered, and a seton was ordered to be applied, which was the cause of my being desired to visit her. She was about 20 years of age, and her catamenia were very irregular. On inquiring into her case, it appeared that her general health had been greatly disordered for some time. She complained of an indescribable sense of languor, and there was an extreme degree of anxiety and restlessness about her, much of which was attributed by the nurse to temper. She suffered from constant pain in her head; she had a great sense of stricture at her stomach, was incapable of digesting any food, and her breathing was so difficult, that it might with more propriety be called panting, her alæ nasi working as in a patient labouring under severe asthma.

On tracing the direction of the pain, it distinctly took the course of two of the costal nerves, and on examining the corresponding vertebræ the muscles were much wasted, the integuments had a peculiar doughy feel, and were slightly œdematous, and there was great tenderness on pressure. I entertained no doubt of the existence of disease in the spine, and recommended that immediate attention should be paid to it. The following day, her head became worse, and by night she was delirious, in which state she continued for ten days, when she died. During the last week, she had all the characters of a patient with bad typhus fever, she passed her fæces involuntarily, and her bladder was palsied, requiring the use of the catheter. For some days before her death, she never attempted to move hand or foot, and was perfectly insensible to all external impressions.

On examination, many tubercles were found in a state of suppuration in the substance of the brain and near its surface, and the pia mater was loaded with serum. In the chest the lungs were found studded with tubercles. Behind the pleura and on the surface of the bodies of the vertebræ, lymph and a peculiar cheesy secretion were thickly deposited. Suppuration had taken place behind the root of the left lung, and two of the ribs, exactly corresponding with the seat of the pain, were ulcerated at their articulations with the vertebræ. Considerable disease existed in the ver-

tebræ and canal, and entire absorption of the intervertebral cartilage had taken place between two of the vertebræ.

In this case, although there was such extensive disease in the spine and brain, there was no paralytic affection, until within a few days of her death. She had complained much of pain in her head, but was quite sensible and particularly sensitive. In several similar cases I have known large tubercles to exist in the brain, without inducing any symptoms, until suppuration or membranous inflammation have taken place, when they speedily terminated with every marked character of disease of brain.

The following case occurred very recently, and affords a good example of the difference between the symptoms dependent on affection of the spine, and those arising from cerebral disturbance.

George Davis, aged 3, whose mother had died consumptive, and whose father was at the time in a mad-house, was brought into St. Bartholomew's, having totally lost the use of the lower half of his body. On inquiry, I found that the child had been considered healthy, until about five weeks before its admission. The first circumstance which had been remarked was, that the child, from having been remarkably cleanly in its habits, constantly wetted itself and passed its fæces without

warning. Soon after this the right leg failed in walking, and the child fell. The following day the left leg dragged, and in the course of two more days, the lower half of the body was paralytic. At the time of its admission, there was total loss of sensation and motion, and, further, a loss of the power of regulating the temperature, so that considerable vesications had formed on the child's knees and legs, from lying in a person's lap before a small fire. The belly was very tumid. The child had a constant cough, with very frequent respiration, and, when not sleeping, was incessantly crying. On examining the spine, there was no particular projecting part, but the whole was much arched, from the wasted state of the muscles. The child was obviously in so hopeless a state, that little was ordered for it, but as far as possible to administer to its comfort. About a week after its admission, marked symptoms of inflammation of the brain came on. The following day there was strabismus, with the mouth drawn down, and loss of speech. The eye constantly half closed, and pupil fixed. Constant restlessness, with the hands picking, and apparently conveying food to its mouth. Repeated convulsions closed the scene. The treatment was active, but perfectly unavailing.

On dissection, the head presented all the marks of recent active inflammation. The ventricles were large and distended with fluid, the convolutions

much flattened, and the pia matter loaded with fluid. In the basis, there was a small tubercle under the membranes, just over the left crus cerebelli. The upper part of the medulla spinalis and the medulla oblongata were much firmer than I ever recollected to have felt, well deserving the appellation of endurcissement. The sheath of the spinal marrow was distended with fluid at the upper part. The whole spine was removed and carefully examined. On cutting away the spinous processes, a large tumour was apparent, covered by the membranes, and situated about the middle of the dorsal spine. The membranes were highly vascular above and below this part, but were nearly bloodless in this region. The tumour completely filled the canal so as to prevent any communication between the lumbar and cervical portion of the spinal sheath; below the tumour there were about ten drachms of fluid in the theca, and the cauda equina was quite flattened. On dividing the membranes, it was found that the tumour, a large scrofulous tubercle, occupied nearly the whole calibre of the medulla, which was almost entirely absorbed.

This most satisfactorily explained the entire loss of sensation and motion, and the want of power of regulating the temperature, as no doubt all the functions of the spinal marrow were destroyed below the seat of this disease. The symptoms connected with the subsequent affection of the brain were totally distinct and well marked.

I feel happy in having it in my power to present a very accurate drawing of the appearance of the tumour contained within the sheath, before the pia mater was divided. I beg leave also to submit to the inspection of the members the spinal marrow itself, with the tumour cut open, as seen in the accompanying preparation.

George Street,
May 20th, 1827.

OBSERVATIONS

ON

THE NECESSITY AND METHOD

OF

FURTHER INVESTIGATING

THE

DISTINCTIONS BETWEEN SYPHILIS

AND

OTHER VARIETIES OF VENEREAL DISEASE.

By R. WELBANK, Esq.

Read March 13, 1827.

IT would seem a sufficient plea for soliciting the attention of this Society to the subject of venereal diseases, that they are maladies of every day occurrence, in which human suffering, moral as well as physical, is often deeply involved, and in which our judgment is sought with the greatest anxiety, and our treatment contemplated with the most vigilant distrust. But it may be further urged, that accumulating records are now generally known to have rather exhibited the extent of our uncertainty upon these subjects, than diminished those difficulties and doubts which confound the student, and perplex the experienced.

There exists indeed at present so little unanimity among the members of the medical profession as to the nature of venereal diseases, that the state of opinion may be termed a schism, in which the one party is inclined to believe in the distinct plurality of primary poisons, the other to refer the great diversity of venereal disease to modifications of one virus by varieties of individual constitution. To add to the complexity of practice attendant upon these sentiments, many have still further suggested a progressive alteration in the maladies themselves, some are content to credit an indefinite combination with scurvy and scrofula, and others secure themselves against the possible contingencies of empirical treatment, by the supposition of a mercurial disease, equally indeterminate, and as easily and generally applicable in every difficult emergency.

Of these hypothetical changes and combinations, not observable in other contagious diseases, the consideration may be reasonably deferred, at least till we are something more agreed in prescribing the limits and characters of the original venereal disease, or of those several affections which are said to have become composite. It is moreover superfluous to infer any such alterations in the nature of venereal diseases, for various records, of various dates, from various countries, shew that the same complexity has always and every where attended their history. Lastly, mercury can only be accused

with justice of exasperating under certain circumstances some forms of venereal disease, especially the phagedænic. This, however, may not unfrequently occur in identical characters, without any possibility of its being ascribed either to the use of mercury, or to venereal contact.

In considering the individuality of the several, or the unity of all venereal diseases, if we admit constitutional modifications of actions resulting from specific stimuli, of such potency as to be the exciting cause in one instance of a disease directly and uniformly tractable to the influence of mercury, and in another of a disease even exasperated by the use of the same remedy, we may at once, as far as practical rules are concerned, disregard the limitations of nosology, and leave treatment to individual empiricism. It will however be safer at present to subscribe to "the old evasion of occult causes," or, in plain words, admit our fallibility, than suppose that natural processes so variously and capriciously deviate from general laws. We have sufficient and determinate difficulty to encounter, without the indefinite addition of hypotheses, which the doctrine of anomaly must supply.

All admit that there is a great variety of morbid affections of the genitals, and of symptoms consecutive or attendant on them. All again will admit that many of these, multiform as they are, occasionally resemble each other so nearly, prima facie

and for a varying period or stage, as to be undistinguishable by the most experienced. All, or at least those who have witnessed the irreparable ravages of these diseases, too often promoted by inappropriate treatment, will readily testify to the utility and even necessity of diagnosis.

Inoculation, in the varieties most important from their contamination of the general system, is an unjustifiable mode of investigation in the present state of our knowledge: nor if we had the aid of inoculation, could we hope to establish that uniformity of effect so necessary in questions of causation, for some of the most highly contagious forms of venereal disease may arise without any specific excitement, and might therefore confound even the experiments of inoculation. How then can we prosecute inquiry? How distinctly ascertain the several processes of disease induced by the several venereal poisons, if they be several?

Difficulties, which are apparently almost insuperable, seem still to leave us a practicable method of investigation. Instead of recording with laboured minuteness the resemblance or dissimilarity, confessedly sometimes fallacious, of primary sores, of eruptions, or of other really or seemingly consecutive diseases in the cases of different individuals, we should faithfully chronicle the diversity of disease existing at the same time in the same person. We should note, for instance, the various character

and progress of a phagedænic sore, as it attacks different tissues, or the phenomena of several of these sores, when they have occurred at the same time, in different situations, from the same infection. Let us also record the multiform secondary effects of the same disease, contemporaneous in their appearance, or co-existent in the same system, and various as they are manifested in absorbents, mucous membrane, skin, cellular tissue, fibrous membrane, or in the bones. From repeated observation of collective phenomena, we shall soon arrive at the inference that many affections, often noticed in conjunction, but various in their apparent characters, are in reality the constant result of one or other distinct stimulus acting upon a diversity of organization. By a patient and unbiassed prosecution of this mode of inquiry, we cannot fail soon to acquire diagnostic data, which will enable us to solve some of the most difficult problems in the distinction of venereal complaints, for there will be readily found some forms, or some stages of disease in each so characteristically peculiar, that by them we may safely consolidate classification and regulate treatment.

Let any one observe for himself the following contrasted points of general difference between Syphilis and the Phagedænic disease. These are two forms of venereal disease, most important from the general utility, and (as I am compelled to believe) occasional necessity of employing mercury

for the former, and of restricting, if not altogether discontinuing its use in the latter, except as a local agent. They are also important as indistinguishably simulating each other prima facie under some circumstances, or in some states or stages of their several symptoms. They are important, as they may perhaps yet be found to be the only two forms capable of contaminating the circulation, and they are not the least important that one of them, the Phagedænic disease, although contagious, and consequently justly classed with venereal affections, is, in all its symptoms, not unfrequently spontaneous, or consequent on simple excitement. Inattention to these latter facts has too often aggravated the sufficient evil of physical suffering by moral imputations.

Syphilis in general is first observed at a more remote period from sexual intercourse than other venereal diseases. It commences in some point of inflammation, which is soon characterized by abrupt induration. It proceeds, sooner or later, to indolent and uniform ulceration of the surface, between which and the edge there is no undermining groove of separation. The inguinal glands are little, and often not at all disturbed by the absorption of the virus, even when secondary diseases have already manifested themselves.

The secondary diseases of Syphilis arise in the series noted by Mr. Hunter, attacking first the

skin and throat, and then deeper-seated parts. They are ushered in by a soft and much accelerated pulse, without any other obvious febrile symptom, and by severe nocturnal pains. They are indolent, and slow of progress. They consist of an eruption of firm and slightly elevated spots, from which pellicles or scales are from the commencement successively detached. These spots are thick about the scalp, chin, forehead, and upper and inner part of the thighs. In situations where there is hair, they frequently form slightly-elevated crusts of a pale colour. When they appear on the palms of the hand, or soles of the feet, they are characterized by a thick honey-comb desquamation of the dense cuticle. They are more disposed to superficial ulceration, when confluent or situated between opposed and secreting surfaces, as the angles of the mouth, scrotum and thigh, the nates, or between the toes. The ulceration of the tonsil is attended with little pain at first, and excavates the part affected deeply and often in a triangular form, as if the tonsil were split. This ulceration slowly acquires, especially on the supervention of simple excitement, a smooth buffy surface. Syphilitic nodes are a late symptom, and appear in the form of a painful, but chronic enlargement of the bone affected. Syphilis is a rare disease, and is in every form directly superseded pro tempore by the excitement of mercurial irritation. It is long intractably stationary, or even progressive in most cases, unless mercury or sarsaparilla be employed.

Phagedæna may arise spontaneously in cachectic habits, either in its primary or secondary forms. Sometimes it is first noticed many months after sexual intercourse, sometimes on the day following; it exhibits in general a rapid inflammatory ulceration, succeeding to pustule, extensive excoriation or fissure of surface. Frequently there is puriform discharge from the urethra. This is often recorded, under the name of Gonorrhea, as the cause of secondary diseases. It is however in many cases only a concomitant mark of a certain cachectic constitution. It sometimes first appears contemporaneously with the supposed secondary diseases, sometimes three or four weeks after primary ulcerations of the genitals. Sometimes it recurs many months after supposed cure, in conjunction with eruptive diseases. It differs both in progress and cure from simple gonorrhea, and may have appeared ten or twelve times in one patient, from constitutional liability. Primary phagedænic ulcerations are various and multiform, and do not always exhibit a continued disposition to extend themselves. They in general spread at their edges, in parts or the whole of their circumference, and are characterized by considerable tumefaction of cellular tissue, and frequently phimosis. Natural processes of reparation in milder forms of the disease quickly follow those of destruction. The secretions in phagedænic ulceration are, for the most part, sanious or purulent, and ordinarily profuse. The inguinal and other absorbent glands become subject in many cases to rapid

enlargement and suppuration. These affections of the absorbents often arise when the exciting sores are healing or have healed.

The constitutional diseases of Phagedæna are frequently coexistent, and even simultaneous, in their origin with those termed primary. They do not attack different structures in any regular series, and even nodes are contemporaneous with cutaneous and other diseases, or even precede them. Some of them often exist in an active state, with little disturbance of the circulation, and are generally characterized by rapid or sudden local inflammations. The affections of the skin consist of distinct purplish or brownish spots, with or without elevation, of a thick papular, vesicular, and pustular eruption on the trunk and extremities, the three forms being generally conjoined. These eruptions are not found on the palms of the hands and soles of the feet, and exhibit an appearance of desquamation on their decline only. Sometimes there are distinct superficial tubercles slightly vesicating, or large phlyzaceous pustules forming crusts. When the phagedænic virus attacks the cellular tissue, it causes deep red and much elevated tubercles, of various sizes and furunculous character, the larger of which often exhibit a considerable extent of phlegmonous inflammation. A superficial and rapid ulceration of phagedænic character exposes the sloughy cellular tissue, which leaves a deep cavity on its separation. Frequently may be noticed a

combined affection of the skin and cellular tissue, attended with superficial ulceration, which extends at its edge, while it heals in its centre, forming an islet or peninsula of skin. These sores, which are frequently covered with prominent crusts of rupia, resemble in shape the base of the horse's foot, and leave a white depressed cicatrix, circular or oval, and very characteristic of phagedænic ulceration. Sometimes large patches of integument become red and indurated, and subsequently ulcerate superficially into many circular, oval, and crescentic sores. These are especially frequent about the carpus and tarsus, and round the elbow, ancle, and wrist joints, and on the thigh and calf of the leg. The phagedænic ulcerations of the throat and fauces suddenly occupy a considerable space, exhibit often a shreddy irregular surface, and a bright red and everted edge. Sometimes the phagedænic process is limited to the mucous membrane, which is grooved out by the advancing edge, while processes of reparation are visible in the parts first affected. Suddenly suppurating inflammation occurs, even at early periods, about and beneath the periosteum of various bones, particularly of the cranium, nose, and tibiæ, and about the carpus and tarsus, this symptom being more generally observed where mercury is indiscreetly employed. Intense and agonizing pain attacks the external parts of the head, in many cases. With the eruptions of the skin is often joined iritis. Inflammation and ulceration of the larynx, enlargement of the testicles, effusion

into the joints, especially of the knee, and phagedænic ulceration about the lacrymal sac and eyelids, may be added to this long catalogue of disease; and sometimes there exists extensive herpetic ulceration of the skin of the face and forehead. This affection often destroys in its progress the alæ and septum of the nose.

Mercury administered so as to affect the circulating system is superfluous in the milder symptoms, and exasperates generally the more severe. Even when apparently yielding to an increased action of mercury, the maladies suddenly relapse, and are often protracted in their duration. The disposition of many of the milder forms of this disease to processes of natural cure and reparation, is a frequent source of error in estimating the utility of mercury, and even the more severe forms are in some instances, for a time, superseded by pushing, as it is termed, a mercurial course. Each relapse, however, of disease, especially in its more formidable shapes, is aggravated in severity proportionably to the disturbance of the constitution unnecessarily induced by such injurious treatment, till at length an irremediable state of disease is established. Iritis is the only affection in which the risk of irreparable injury by delaying the use of mercury, counterbalances the almost certain evil of administering it so *as materially to disturb the circulating system.*

The classification, in the above sketch, of the triple eruption of papulæ, vesicles, and pustules, with the symptoms of the phagedænic poison is, I am aware, not altogether accordant with the observations of Mr. Carmichael, who candidly admits that he has not met with many instances in which he was enabled to follow the primary ulcer of his pustular venereal disease to its constitutional symptoms. He has moreover stated that this variety forms "the natural link between the papular and phagedænic venereal diseases." That the papular eruption (which even Mr. Carmichael's cases, as well as those published by Mr. Rose in the Transactions of this Society, shew to be seldom purely papular) is not a consequence of common gonorrhea, general experience would as clearly indicate, as that all discharges from the urethra are not the same in their nature. That it does not succeed to the elevated ulcer, better named venerola vulgaris, the evidence of Mr. Abernethy may be adduced, who says, after a most accurate portrait of this form of disease, "I never saw any secondary symptom succeed to this species of ulcer." During many years' attention to the phenomena of this very common sore, no instance has occurred to my own observation or knowledge of secondary disease in such cases treated either with or without mercury. There are, however, sores both primary and secondary, (the result of the phagedænic poison manifested

in other attendant symptoms,) which closely resemble the venerola vulgaris. They are perhaps in general more superficial, larger, and more rapid, but both in venerola and phagedæna processes of reparation commence in the centre, so that these sores occasionally nearly simulate each other. Lastly, having repeatedly seen the papular, vesicular, and pustular eruption conjoined with symptoms unequivocally the effect of the phagedænic virus, I am compelled to consider it one of the milder consequences of the same stimulus.

The proposition of referring a great variety of disease to one or other distinct poison, is neither hypothetical nor suggested merely by the accumulating evidence of my own note-book, but may be confirmed by collation of the records furnished by Mr. Abernethy, Mr. Carmichael, Mr. Rose, Mr. Evans, and others, whose opinions are often in wide variance on the subject of these maladies. Nor can I dismiss this part of the subject without expressing a belief that if we content ourselves with recording collectively the various symptoms induced by the same stimulus in the same individual, but in different parts and tissues, we shall find that the most intricate complexity of venereal disease will gradually assume something like order, and that the eye alone will soon detect essential distinctions in the great majority of phenomena.

It remains for us to examine the arguments for

the supposition of an inextricable combination, or rather confusion, of these complaints. The facts which have induced some to attribute to one source diseases not only so various in their primary characters, so different in their progress, so distinct in the production or non-production of multiform secondary affections, but even tractable by the most opposite treatment, are principally, that *different* sores or other primary disease in one or different individuals have been observed to succeed to infection from the same female. For instance, Dr. Hennen has mentioned that after connexion with one woman in the same hour, one man escaped without disease, a second contracted chancres and elevated sores, and a third gonorrhea. And it has been further noticed that *various* forms of secondary eruptions and other maladies have arisen from the *same* primary sore in the same individual, or from sores, *precisely similar* in apparent character, in different individuals. And lastly, that *the same eruptions* or other secondary diseases have attended or followed sores *widely dissimilar* in their apparent characters.

A solution of the former difficulty relating to the complexity of primary venereal disease, is readily found in the obvious fact, that the same poison will give rise to different phenomena in parts differently organized. The virus of gonorrhea affecting the urethra produces gonorrhea; if it invades the cellular tissue of a torn frænum

or an abraded surface, it may produce the venerolic ulcer. This sore alone, in addition to other occasional peculiarities, exhibits four totally distinct appearances in its several stages. But it is said, true chancre, real syphilis, has arisen under the same circumstances of infection. What then are the prima facie phenomena by which we should venture to determine syphilis? Mr. Hunter has testified to his occasional perplexity, and acknowledged that he has seen sores putting on "*all* the appearance of a chancre," under circumstances precluding the possibility of real syphilis. Mr. Abernethy has described several varieties of true chancre, and has directed his observations against diagnosis, founded on prima facie appearances of venereal diseases. Mr. Samuel Cooper in an article in his Surgical Dictionary upon this subject, valuable from its collective information as well as impartiality, has expressed his concurrence with the opinion of Mr. Guthrie, that many of the ulcers produced from the matter of gonorrhea "will occasionally assume every character of chancre, and cannot be distinguished from it." There is, indeed, a too generally repeated and most fallacious description of a real chancre, viz. a sore circular or oval, abruptly indurated, covered with adherent matter, having no disposition to reparation or progressively ulcerating. Not only is there in this portrait no single characteristic individually applicable to syphilis, but the collective phenomena are not unfrequently seen in

other ulcerations of the genitals, and especially in the venerola for some weeks. In the treatment of this latter disease, I have repeatedly seen in my own practice a free use of mercury enjoined, and subsequently discontinued from its inutility or prejudicial influence, by several of the first surgical authorities of this metropolis.

But were it granted that syphilis had arisen in the same individual, together with the venerolic ulcer under the same circumstances of infection, rather than reason generally from such an exception or adopt so unphilosophical a conclusion, as that one and the same cause acting under precisely the same circumstances, could produce effects so distinctly different as venerola and chancre, the one disease being directly amenable to mercury, and the other often exasperated by its use; it would be safer to suppose that the virus of syphilis had co-existed in the infecting person. We are not justified, indeed, in inferring from the absence of disease the non-existence of a poison, as it is quite possible that a poison may have existed, from whose effects the original bearer was still exempt. Various instances of sores resulting from connexion with women apparently healthy must be familiar to surgeons; venerola and phagedæna are in the number of these. A point not sufficiently adverted to in considering the multiplicity of disease, apparently arising from the same infection, is the disposition which may exist in different

or the same individuals to spontaneous morbid affections of the genitals, and consequently not unlikely to succeed the mere local excitement of sexual intercourse. Among these it may be useful to notice the psoriasis præputii, and scrotalis, in which may frequently be observed distinct spots of a brownish tint and elevated. These are often scaly, and with them may exist similar spots thick about the scalp and upper extremities, especially at the wrists. There are also in some instances erythematous and aphthous inflammation of the tonsils and fauces and mouth. Discharge from the urethra, in general of short duration, occurs repeatedly in persons subject to these affections.

A source of great variety in the effects of morbific poisons, is that various degree of power which is ascertained by direct experiments to be proportionate to the temporary activity of the disease from which the contagious matter is taken. This fact is of high importanee, both as regards secondary as well as primary symptoms; for it may, perhaps, depend on this various degree of virulence whether an eruption in the same textures of the skin shall be papular, vesicular, or pustular, or a phagedænic sore be deep or superficial, stationary or disposed to extend its ravages.

And lastly, in our view of the sources of complexity in the multiform phenomena of the same

poison, we have still to include the many adventitious circumstances which may tend by their stimulant or sedative agency to produce a corresponding influence, or the prima facie characters of primary venereal disease.

On the subject of the diversity of secondary diseases, accumulating observations seem unnecessarily perverted to an increase of our perplexity rather than of our knowledge. This has arisen, as in the details of primary disease, from deciding upon their nature, from the present appearance, so often fallacious, of eruptions, &c., instead of their history and progress and their concomitant affections. Resemblance or dissimilarity are converted into identity or total difference. Yet Dr. Bateman has said, "These eruptions assume such a variety of forms that they bid defiance to arrangement according to their external character, and in fact they possess no common or exclusive marks by which their nature and origin are indicated. There is, perhaps, no order of cutaneous appearances, and scarcely any genus or species of the chronic eruptions, which the secondary symptoms do not *occasionally* resemble."

The occasional co-existence of distinct primary diseases is a possible origin of much complexity in the secondary phenomena. Not however to dwell on these or other causes of diversity applicable to the secondary as well as to the primary

diseases, let us examine what proof can be adduced from them that the position of Mr. Carmichael, that there are distinct poisons productive of peculiar and distinct effects, is not in the main correct.

Various eruptions and other disease, it is said, have arisen in the same individual from the same sore, or in different individuals from sores precisely similar in their apparent characters; and lastly, the same forms of disease have succeeded to sores widely dissimilar in appearance. With regard to this last position, it has been shewn, and is generally admitted, that sores widely dissimilar in appearance may result from the same infection. It cannot therefore be argued that these secondary diseases were not the product of one and the same poison, because the primary sores were unlike each other. If, again, as observation will constantly shew, various forms of eruptions and other secondary disease arise in the same individual from the same sore, à fortiori the diversity may be expected in different individuals whose primary sores may be admitted to have been even the same. The question therefore resolves itself into the simple inquiry, whether, because various effects are seen in various tissues, resulting from one virus, and because some of these closely simulate primâ facie the effects ascribable to other poisons, we are justified in confounding them altogether?

The object of this paper is not to enter into complicated details, but to suggest reasons for a patient investigation of the opinions of Mr. Carmichael, to the general truth and accuracy of which my own experience compels me to offer a humble, but very grateful testimony. If investigation be prosecuted without prejudice, we cannot fail to ascertain the distinct individuality of the syphilitic and other poisons. We shall then be able to consolidate a nosology, or rather nomenclature, already diffuse beyond the ordinary capacity of the human mind. Treatment will be further simplified by the united observations of physicians and surgeons, and a common classification of these maladies adopted. At present, the nomenclature of many is not more diverse than the remedies, for while ecthyma cachecticum and rupia simplex or prominens, are treated with tonics or lenient remedies by the physician, the same affections under the common name of venereal disease are often condemned to a very injurious influence of mercury by the surgeon.

If it be said that diagnosis is unimportant, my own observation will vouch that irreparable injury of the palate and of the penis, and even the sacrifice of life have resulted from unfounded apprehensions of employing mercury in the cure of syphilis. Of the exasperation of phagedænic disease by the indiscreet use of the same remedy, three fifths of the venereal patients admitted into a

London Hospital afford a sufficient evidence. This latter disease is, to use the words of Mr. Carmichael, "a malady which is chiefly rendered formidable by injudicious interference, and which too often leads the victim of mal-practice through a disgusting and offensive train of symptoms to a painful and lingering death."

The original object of the preceding communication was, as stated, not to investigate the too extensive subject of venereal disease in detail, but rather to suggest certain topics for further inquiry, with the view that the observations offered might be confirmed or corrected by a more extended examination than the limited experience of any individual could effect. The practical utility however of illustrative cases having been suggested, the following records are appended as exhibiting some points in the three more important varieties, syphilis, phagedænic venereal disease, and the venerola vulgaris of Mr. Evans. It would have been perhaps better to have considered these fully and separately at some future period, but no regret on my part will attend the imperfection of anticipated publication, if any additional impulse is given to that inquiry, which the frequency, complexity, and severity of venereal disease so imperatively demand.

Primary Syphilis is in general distinguishable by its character of abrupt cartilaginous induration,

slow progress, and superficial ulceration. It is in these, and other points already considered, different from ulcers, which, commencing in pustular inflammation, are for a while rapidly progressive, and become indurated during the excitement of their earlier stages. It seems questionable whether pus is a product of syphilitic action. The secondary symptoms of syphilis are, as before observed, peculiar. Mercury affecting the constitution, even slightly, directly and uniformly antagonizes and supersedes the influence exerted by the syphilitic virus, but is no specific antidote to the virus itself, which must be gradually modified or eliminated by the system at large*. Hence, if the most severe and protracted courses of mercury be discontinued while the virus still exists in the system, the disease rapidly recurs on the subsidence of the mercurial action, nor does the most violent use of the remedy afford more immunity from relapse than the mildest, if adequate to the pro tempore subversion of the disease. On the other hand, the disease recurs with a severity proportionate to the super-

* Mr. Hunter has adverted to the occasional inadequacy of courses of mercury, and suggested an explanation in the supposition of a disposition and subsequent action, of which the latter only is curable. Among early records of the failure of an empirical use of mercury, is the history of a charlatan, who is stated by Benvenuto Cellini to have acquired great reputation by his ointment, but would have been massacred, had he remained in Rome till the event of his treatment could have been more fairly estimated.

fluous derangement of health, occasioned by abuse of the remedy.

It is an important question how far secondary diseases are capable of renewing or increasing the quantity of virus in the system by fresh absorption. It is a fact, that the absorbents become affected subsequently to the establishment of secondary disease; for instance, those behind the ear and at the side and back of the neck, when the scalp and throat have been attacked by secondary disease. As mercury has in syphilis the property of converting an ichorous into a puriform secretion, and inducing processes of healthy reparation, to protract the formation of fresh virus is attended with unnecessary hazard. The most obstinate and tedious cases of syphilitic infection appear to be those in which diseased actions, whether primary or secondary, are allowed to proceed. The consequences resulting from the adoption or neglect of these principles, as well as the practical value of a possible spontaneous cure of real syphilis, will be illustrated by a few cases.

T. N. had observed extensive excoriation three weeks before, which for the most part healed readily, but left abrupt induration about the frænum præputii. This gradually increased, and became raw and superficially ulcerated. It was determined, in consultation with another surgeon, to effect a slight action of mercury upon the patient's system,

and the plan was adopted for about three weeks. The disease readily yielded, and had disappeared in a few days. In about two weeks from the discontinuance of the remedy, slight soreness of the throat was noticed, and continued progressive for four weeks at the sea side. At this period he had manifestly excavated ulcers of the tonsils, scaly eruption, nocturnal pains, accelerated pulse, and the hair was falling off. He now consulted, on his return to town, a third surgeon, by whom the use of sarsaparilla alone was suggested. The symptoms yielded in about three weeks, but relapsed in about a fortnight after discontinuance of this plan of treatment. It was now determined to try a severe use of mercury for eight weeks; the syphilitic symptoms immediately yielded. The patient after this course went to the sea side, but returned within twelve days from the period of omitting mercury, with deep sloughy ulcer of the left tonsil, and greatly disturbed health. Sarsaparilla decoction again mitigated the symptoms, but the disease relapsed, and became actively progressive. The extension of the malady was deemed a sufficient warrant for a repetition of a severe use of mercury, which plan was vigorously prosecuted about ten weeks. The patient became well rapidly, and continued free from disease till about three weeks after discontinuance of the treatment, when he again returned from the sea side with extensive disease of the pharynx and tonsil, and with incipient inflammation and ulceration in the centre of the soft

palate. The disease being now pronounced to be mercurial, sarsaparilla, bark, and some local treatment, was ineffectually tried. The patient's sufferings increased: the extent of the diseased surface could not be seen, the soft palate was perforated and sloughing, the general health was sinking rapidly, and ptyalism, from irritation in the throat, supervened in a distressing degree.

The use of sarsaparilla was now sanctioned by a fourth opinion, and the employment of mercury still delayed. Within two days the disease had advanced so close to the uvula as to threaten a division of the palate. Seven grains of the hydrargyrum cum creta, with one-third of a grain of opium, were now administered twice a day, and in a few days the quantity was increased to ten grains. In three days the diseased processes were checked, the sloughs partially separating, and the ptyalism subsiding. The patient's health and strength were gradually re-established, and all tendency to relapse of disease occasionally manifested by a few spots, or slight soreness of the throat, were directly and effectually remedied by a few additional doses of compound calomel pill, which medicine was continued in small quantities to the final and complete restoration of his health. About fifteen months elapsed during the treatment of this case. The aperture in the palate remained unclosed.

M. L. observed a sore spot, rather thickened, on the integuments of the penis, about three weeks after sexual connexion. This gradually increased, and two other points of inflammation assumed a similar character of tubercular disease, superficially ulcerative. Simple dressings and external cold were recommended. Under this treatment the extent and bulk of the diseased parts slowly increased till, at about eight weeks from the period of infection, febrile excitement with pains supervened. In consultation with an eminent surgeon, a mild course of mercury was recommended. A very frequent and soft pulse now quickly regained its natural state, and the syphilitic symptoms, local and constitutional, promptly receded. The mouth was slightly affected during six weeks' inunction. In five weeks after the discontinuance of the mercury the patient had sore throat, scaly eruption, disturbed health, and his former frequent and soft pulse. The use of mercury was re-enjoined in consultation, and adopted to slight ptyalism for four weeks, with the prompt effect of curing his several complaints. Notwithstanding the advantage of sea-air, and the use of sarsaparilla, he returned with incipient ulceration of the tonsil within two weeks from the discontinuance of the mercurial treatment. He was now fortunately content to prosecute a mild mercurial treatment, which speedily reinstated him in health, and being continued for some weeks, was cautiously discontinued when it appeared that he was no longer

plaints. Small doses of compound calomel pill were adequate in this case to the restoration and maintenance of health for the necessary period.

H. L. contracted a tubercular chancre at the side of the frænum, much indurated and superficially ulcerative. The disease yielded to an internal employment of mercury, which slightly affected his gums, and was soon discontinued from its prejudicial influence on his general health. In about ten days after the omission of the remedy, he had a buffy excavated ulcer of the tonsil, which soon became actively progressive under antiphlogistic and palliative treatment. He was admitted into a public institution. Considerable ptyalism had supervened on the increasing disease of his throat, and probably led, with other circumstances of his case, to treatment with decoction of sarsaparilla only. Considerable mitigation of symptoms attended at first the use of this remedy, but the disease actively relapsed, and destroyed the patient by its unchecked ravages, within eight weeks from its first attacking him.

M. E. contracted a large excoriated sore behind the corona glandis, which had healed under the use of mercurial pills continued to a slight affection of the gums, and the local employment of black wash.

He soon became affected with pains in the limbs, which yielded to a renewal of small doses of mercury and diet drink. At about ten weeks subsequent to his first infection, he had still, while under the latter treatment, considerable induration left behind the corona glandis, encrusted spots in the beard, circular spots on the hands and feet, which had recently desquamated, ulcerative rhagades between the toes, and had had slight sore throat. These symptoms all yielded promptly to slight mercurial action, which had restored him to apparent health in about four weeks. He presented himself casually to my notice about five weeks after, and his symptoms had recurred, and were progressively getting worse under neglect.

L. E. contracted a sore near the frænum, which healed under the use of blue stone, but left induration. In about four weeks he had severe nocturnal pains, soon followed by slight sore throat and inflammation of the ear. This latter symptom was succeeded by discharge from the meatus of a reddish sordes, and deafness. Under the use of warm baths, aperient medicine, and low diet, the whole of these maladies became worse during about twelve days, and the small induration of the prepuce had increased to a bulky and raw sore. They now speedily yielded, including the deafness, to a mild internal use of mercury, which slightly affected the

mouth. The disease subsequently relapsed, on the too early discontinuance of the remedy, which being resumed again, restored him to health.

P. E. contracted extensive excoriation, attended with much indurated thickening behind the corona glandis. During the subsequent six months this disease healed and reulcerated, under trivial and occasional local treatment. During the whole period the patient's health became progressively disturbed, and he fancied himself labouring under rheumatism. At length the primary disease became more actively inflamed, and mottling of the skin, scaly spots, and sore throat, were added to severe pains, which were worse at night. These symptoms all subsided rapidly on the speedy excitement of slight mercurial action, and the patient maintained his health for three months by alterative doses of mercury, which in no way prevented his attention to his ordinary occupations. He had no further relapse.

C. N. contracted a sore which did not attract notice till four weeks after connexion, at which period an indurated and excoriated tubercle evinced symptoms of active inflammation, and soon threatened sloughing. The inguinal glands on one side became tender and enlarged. All these affections

yielded directly to the use of mercury by inunction. Nocturnal pains, scaly eruption, and soft and frequent pulse, indicated the contamination of the system soon after the discontinuance of the mercurial treatment. These symptoms were readily controlled by doses of compound calomel pill, administered according to circumstances, and the patient's health was gradually and completely re-established by the prosecution of this plan of treatment, which neither interrupted business or pleasure, even during the severity of the winter months.

I cannot conclude the considerations relative to the treatment of syphilis, without expressing a conviction that it will be found uniformly and readily tractable to a rational and innocuous use of mercury. Unfortunately the surgeon has too often to contend with the patient's prejudices either "against the imaginary consequences of this remedy," or (still worse) in favour of some supposed specific powers, if it be employed in large quantities. Against this fallacious notion of "the safe side, and good old plan," a protest should be entered by every one acquainted either with the older or more recent documents on the subject of venereal diseases.

The following cases exhibit at least the probability of some intimate connexion between the pa-

pular and pustular and the phagedænic venereal diseases, as well as the possibility of their spontaneous origin in some instances, and consequently of their constitutional as well as contagious nature. A collation of the history of papular and pustular venereal disease, as described by Mr. Carmichael, with the history of papular eruptions by Mr. Rose, in the eighth volume of the Transactions of the Society, and the observations of Mr. Evans on the venerola superficialis, will shew a concurrence of opinion as to the coexistence of certain and many secondary phenomena distinct from syphilis, yet bearing close resemblance, in some forms or stages, to this disease, but not collectively. The same circumstance will be manifest by the most cursory comparison of facts relative to sloughing, erratic, and phagedænic diseases, as detailed by Mr. Abernethy, Mr. Ferguson, Mr. Carmichael, Mr. Evans, and others.

I. G. had contracted a superficial ulcer, of the size of a sixpenny piece, situated at the side of the frænum. It commenced in a pustular form. For this he had taken a scruple of blue pill daily, and applied red precipitate. His mouth was made sore fourteen days, and the sore healed in a month. He had shortly severe pains, especially in the large joints, slight sore throat, and much fever. He repeated the use of mercury with aggravation of his symptoms, and a general eruption of papulæ, which became pustular in their progress, inflammation of

the eyes, and sore throat. These symptoms supervened while his mouth was sore, and declined gradually. The severe pains and fever shortly recurred, and did not yield readily to treatment with diet drink and extract of conium, but gradually subsided, and irregularly relapsed during a period of two months. His health was finally re-established by five weeks' residence in the country, the beneficial influence of the change of air being directly manifest.

E. G. wife of the preceding patient, had intercourse with her husband a month after the healing of his sore, but at a period when his health was much disturbed by pains, &c. In a few days she observed discharge, unattended by local pain or irritation, severe pain in the head, shoulders, wrists, and knees, and in about seven days more a crop of pimples, which soon formed yellow heads. A third succession of these fell under my notice, and was accompanied by a rather foul ulcer of the right tonsil and palate, of a very inflammatory character. She blew a foul discharge from her nose, and had severe pains in her joints, and much fever. Diet drink and tartarized antimony were prescribed during a fortnight. The symptoms, with the exception of the ulcer of the throat, gradually improved. The irritation in the throat had, at this period, so increased that medicines were swallowed with great difficulty. The detail of symptoms and

treatment during three subsequent weeks, shews little benefit from treatment, and a capricious variability in the symptoms. The disease of the throat had extended itself considerably, and exhibited the foul surface of the phagedænic forms of ulceration. She was now admitted an in-patient of a public institution, and a free use of mercury, together with local fumigation, was commenced. At first there seemed some improvement; as the mouth became sore, the throat partially exhibited a clean surface. After eleven days she was salivated. The partial improvement and the salivation continued after the omission of the mercury by inunction at this date. At the termination of the fourth week from her admission she had died, apparently by extension of disease to the larynx. One crop of eruption, in the first case, did not proceed either to vesicular or pustular disease, but exhibited convex distinct spots, for the most part formed by an aggregation of papulæ, and desquamating after about three weeks. This variety is constantly confounded with the syphilitic psoriasis, and nearly resembles indurated acne.

P. N. observed discharge from the urethra three weeks after intercourse with a female; an inguinal gland subsequently became enlarged. These symptoms yielded to pills (taken three times a day), which made his mouth sore. In two weeks he had a thick eruption on the skin of pimples and pus-

tules. These got well without medicine, in two successive crops. He had afterwards a more protracted eruption, with sore throat and large circular sores, of which the cicatrices are visible on the thigh. At the period of his case falling under my observation, he had a thick copper-coloured eruption, with partial desquamation, and a large patch of inflamed and thickened skin near the ancle, ulcerating in crescentic patches superficially. These were getting well under a severe action of mercury, but were marked by the copper tint long after their decline, a point in which they much differed from real syphilis.

A gentleman's servant, who had had no venereal disease for six years, and then only discharge from the urethra, after suffering disturbed health and vague pains about the chest, became covered with a dense papular and pustular eruption. The spots were various in colour, from bright red to dark chocolate, the more recent elevated considerably; some almost petechial in appearance; he had considerable fever. These symptoms yielded to simple treatment, but relapsed repeatedly. In addition to them was subsequently noticed swelling about the ancles, with tenderness and swelling of the periosteum of the tibia. Diet drink, with compound calomel pill and country air, were the most beneficial measures.

L. S. contracted a sore of the prepuce, commencing in a crack or fissure of the skin, the day after sexual intercourse. This continued to get worse under the action of mercury for some time; was not healed at the period of connexion with another female: this last intercourse was succeeded by discharge from the urethra. The sore now spread rapidly, and at the period of my seeing him was about the size of a half-crown, fungous in the centre, and phagedænic at its edge. He had sore throat, pain and soreness of the chest, and dense pustular eruption about the arms. A subsequent crop of eruption about four weeks after the preceding, exhibited large convex spots, like the syphilitic psoriasis, but desquamating only on their decline, and interspersed with evident pustules.

A. N. contracted ulceration and discharge from the urethra. These symptoms appeared two months after sexual intercourse. The sore commenced in pustules, and spread with considerable swelling of the prepuce; a bubo suppurated; his mouth was not affected by mercury during the cure. About seven months from the date of infection (to which period he had remained well), he had sore throat, successive crops of papulæ and pustules, severe pains, especially about the head, and a renewed discharge from the urethra, without any recent sexual intercourse.

M. E. exhibited well marked phagedænic sores on the face, arm, and legs. He had never had any primary sore on the genitals, but ten or twelve attacks of discharge from the urethra.

H. N. never had either discharge or sore of the genitals. No cicatrix could be seen on the genitals. Had resided in the East Indies with evident detriment to his health. During the last ten months had been more or less ill, and subject to phagedænic sores of the skin; has at the time of my seeing him, well marked phagedænic sores on the arm. These became well from the centre, under linseed poultice, the exhibition of aperient medicine, and the local use of some stimulating lotion.

M. Y. an Irish pauper, has well marked phagedænic eruption with ulcerated throat and very disturbed health. Neither threat of consequences, nor promises of relief, could induce him to acknowledge that he had had any venereal affection of the genitals for twenty years. There were no cicatrices.

S. R. had been treated in the [illegible] for noli me tangere [illegible]

mercury was employed. A crescentic portion of the left ala nasi was destroyed; the angle of the mouth exhibited the cicatrix of a sore, which had spread superficially. At the period of my seeing him he had a large patch of inflamed and thickened skin over the elbow joint, on the surface of which were many circular and crescentic ulcerations of a manifestly phagedænic character. He had had no venereal disease of the genitals for nearly twenty years.

My limits will not allow me to trespass on the Society, by detailing cases of herpetic or erratic ulceration of the skin and mucous membrane, which seem to me a milder variety of that state of constitution in which the more severe forms of phagedænic disease occur, and are not unfrequently seen in conjunction with them. Such cases are in general tractable by escharotics or stimulants, the decoction of sarsaparilla, and good air. Cinnabar fumigations and the yellow wash exercise a very beneficial influence on many cases of phagedænic disease. To the melancholy records of the more severe forms described by Mr. Carmichael, I could add much in confirmation, but nothing of practical importance. I cannot however dismiss this part of the subject, [illegible]hout adverting to the endemic diseases sup[illegible] to be in many instances contracted "by eat-

ing or drinking out of the same utensils with those labouring under them."*.

The history of sibbens and yaws collated with documents relating to scurvy, would tend much to shew the constitutional origin of many of the more appalling varieties of the same disease. Much is certainly chargeable on the severe employment of mercury in the phagedænic venereal disease. One of the most protracted cases which have fallen under my observation occurred after discharge from the urethra, unattended with ulceration, and had been four times treated with courses of mercury, one of which was extended to five weeks' salivation. This treatment was often attended with temporary benefit, but eventually left the patient with multiplied and exasperated symptoms, no longer amenable to the same remedy. That the malady, in its worst forms, is not always attributable to injudicious use of mercury, may be conjectured from the loss of the nose, so frequently noticed among the South Sea Islanders, in Captain Cook's Voyages. The instances of real syphilis invading the bones of the nose are rare, if any. None have occurred to my own observation.

* See an acc[illegible]
Venereal Dis[illegible]

The following cases may perhaps tend to illustrate the distinct nature of the venerola vulgaris. That this form of disease is at least not very likely to be a source of secondary disease, would appear from the circumstance of its being the product of the same infection as simple gonorrhea; from its being metastatic with discharge from the urethra; and from its occurring repeatedly in the same individuals. I have seen it in six or seven instances in the same person. There is however a mild pustular variety of phagedæna, forming an ulcer nearly resembling in appearance, and even undistinguishably, the processes of venerola, especially in its elevation of edge and central granulation. Contamination of the system is not unfrequently consequent or attendant upon this form, which seems to be closely connected, if not identical with the venerola superficialis described by Mr. Evans*.

H. M. contracted three well-marked venerolæ, one on the integuments of the penis, and two near the edge of the prepuce: in cutting some dressing, which he had just applied to the two last, he accidentally wounded the glans penis, and thus subjected himself to a fresh inoculation from the juxtaposition of the sores on the foreskin. He subsequently inoculated a cut-finger in the act of mictu-

* Remarks on Ulcerations &c. p. 93, and note.

rition, and as this last infection was soon attended with much local suffering and pain, extending up the arm, and in the axilla, he consulted another surgeon. He was put under the action of mercury for two weeks, with aggravation of his symptoms, and considerable tumefaction of the finger affected. Six leeches were applied to the finger, and three of the punctures, included with the ulcer in a bread and water poultice, were also infected. The mercury was discontinued, and the diseases gradually commenced and completed their reparative processes. No secondary symptoms supervened.

B. S. had been using mercury three weeks, and had affected his gums during that period, for a sore behind the corona glandis, which exhibited the appearance of venerola vulgaris. The surface was red, but the edge still sharp and inflamed. He assured me that the sore began to spread, if he discontinued the mercury, and the local use of argenti nitras, which fact he had probably noticed during the ulcerative stage of the disease. The malady readily began to heal on the omission of his former expedients, and was followed by no secondary symptoms.

H. E. had s d off a small wart near the frænum, soon observed a small

yellow ulcer. As this went on increasing, and did not after two weeks exhibit any processes of reparation, he became anxious as to the propriety of delaying mercury. By the advice of another surgeon, he now used mercury by inunction, with the effect of retarding the disease already established, while a fresh ulcer in the immediate vicinity continued to extend itself. Both sores healed by the processes peculiar to venerola vulgaris, on the discontinuance of the mercury, and were not succeeded by any secondary symptoms.

W. N. shewed me a well marked venerola behind the corona glandis, of which the appearance had exhibited no change for the preceding eight or ten days. He had used mercury for a month, and his gums were still affected. The ulcer was red on the surface, but sharp-edged, and with no disposition to cicatrization. Healing processes soon succeeded to the omission of mercury, and the use of simple aperient medicine. He had no secondary symptoms. This gentleman had subsequently at a distant period indurated syphilitic chancre, which, with its secondary effects, readily yielded to the use of mercury.

S. H. had venerola vulgaris on the dorsum and glans penis, in three well-marked specimens. He

had subjected himself to two courses of mercury without advantage. He recovered readily at the sea side, after discontinuing his former treatment, and had no secondary symptoms.

I have selected the preceding cases, as they occurred at too remote a date to leave any question as to the possibility of any secondary symptoms, and because they exhibit the inutility, if not the prejudicial influence of mercury in general. It is however just to observe, that small doses of calomel and opium, or other preparations of mercury, are frequently beneficial where venerolæ, after the completion of their ulcerative stage, are indurated and fretful.

A CASE

OF

AMPUTATION OF THE THIGH AT THE HIP-JOINT,

SUCCESSFULLY PERFORMED

By JOHN ORTON, Esq., Surgeon.

Read June 13, 1826.

THOMAS SIMPKIN, the subject of the following account, is a young man about twenty-five years of age, a stocking maker, of Belton, Leicestershire.

The disease which led to the present narrative, began at Christmas 1823, with chronic inflammation of the left knee-joint, supposed to arise from a hurt received by jumping. There was great pain and tenderness of the knee, without much heat or swelling. In process of time the hamstrings became tightened, the limb could not be moved without great pain, the leg became bent, a little at first, and gradually more and more, until it was

brought to a right angle with the thigh. The effect of the flexor muscles was quite remarkable throughout the case; for, by their constant action, the limb was not only brought into the position just mentioned, and fixed, but the leg was actually drawn up under the thigh; the posterior part of the condyles of the os femoris being absorbed (as was seen after the amputation) and the joint dislocated; so that the lower extremity of the femur projected at the knee considerably in front of the tibia.

While this affection of the knee was in progress, a large deep-seated abscess formed in the thigh, which, when opened, discharged; besides purulent matter, a large quantity of a serous fluid, resembling broth, with portions of another fluid swimming upon it, which looked like oil as it flowed, but which proved on standing to be a gelatinous matter. On examining the part some time afterwards, the probe passed directly to the bone, which was bare and rough for a considerable extent. Other abscesses formed in succession in various parts of the thigh, the orifices of which remained open and discharging, until the whole thigh became, as it were, a mass of suppuration. At length the bone gave way.

Towards the latter end of April I found the thigh very much bent, about six inches above the knee, and completely carious. As, however, the

ends of the bone were still kept in imperfect apposition, probably by the periosteum, there was a complete angle formed at the fracture; yet so irritable were the parts, the slightest attempt to move the limb giving great pain, and causing a violent spasmodic action of the muscles, that all my endeavours to preserve the thigh in any thing like a straight position were completely frustrated. In this state the knee and leg were drawn up by the continued action of the flexor muscles, until the foot almost touched the buttock. By degrees the patient got lower down in bed, so that the abdomen came in contact with the upper surface of the thigh. A short time afterwards, the slight periosteal union of the carious bone giving way, the lower portion of it, with the knee, was drawn still farther upward, by which means the end of the upper portion became almost protruded through the skin.

The poor fellow had been confined to his bed by the disease, the progress and extent of which I have endeavoured to sketch, for about half-a-year; when, all hope of cure being abandoned, he consented to have the limb amputated. I therefore requested the parish to allow me a consultation, and on May 11th had the satisfaction of meeting Mr. Henry Oldknow, of Nottingham, (one of the able surgeons to the hospital of that place), Mr. Palmer of Loughborough (a clever and experienced surgeon), and my father.

On a careful and particular examination with the probe on this occasion, it was ascertained that the os femoris was diseased as far as the trochanter major, being bare and rough, with sinuses extending upwards into the soft parts covering the dorsum ilii; and it was concluded that, as nothing short of the entire removal of the limb at the hip-joint would extirpate the whole of the diseased structure, it would afford the only means of saving him. When it was considered how exceedingly formidable that operation is; how hazardous it had always been considered by the ablest and most experienced surgeons; and how unsuccessful it had almost always proved; together with the very emaciated condition my patient was reduced to, the case was thought to be almost hopeless: there appearing so little prospect of success from the operation, that no direct encouragement could be held out.

Under these circumstances, thinking it my duty to be as faithful as possible, I very candidly explained to him the hopelessness of his present state, the nature of the operation, the little hope indeed with it, but the certainty of death without it; desiring him to weigh it over carefully and seriously in his own mind, to consult with his friends, and to let me know what he might conclude on; distinctly stating at the same time, that however little chance of success could be anticipated from the operation, I should not hesitate

to give him that chance, whenever he, after mature deliberation, might determine to take it.

It will not be thought strange that, under the impressions made by this communication, his resolution again forsook him, and that he chose, as he said, rather to die as he was, than undergo such an operation.

Thus the case stood over for five or six weeks. He was so entirely given up by his friends, that the ordinary attempts to preserve cleanliness were abandoned for present ease and quiet: and for weeks together the parts were not dressed at all. In this state of affairs, an ulceration of the integuments on the sacrum, which heretofore, by careful management, had been kept within a small compass, increased formidably, so as to become (as will be seen by and by) a source of great trouble and mischief afterwards. Some benefit, however, for a time, seemed to result from this abandonment. The parts were allowed to assume whatever position they pleased, and although a very unseemly and misshapen limb was the consequence, the position was probably easier and better than any that could have been devised. The fact was, that the parts being scarcely stirred at all, a state of quiet was enjoyed, from which good resulted. The pain decreased, there was less irritation, the accompanying fever abated, his appetite improved, he began to look better, acquired more strength

and vigour, and became more cheerful. This improvement did not continue long. Hectic fever again recurred, his appetite failed, his bowels became very irritable and irregular, and he again sunk rapidly. I now saw that the critical moment had arrived, and again offered to operate; he consented, and June 10th was fixed for its performance.

I was very fortunate in being honoured with the presence and assistance of so many professional friends on the occasion; there being, besides Mr. Oldknow and my father, Mr. Charles Attenborough, and Mr. Jowett, of Nottingham, Mr. Palmer and his son, and assistant, Mr. Swann, Mr. Grey, and Mr. Wright, of Loughborough, Mr. Simpson, of Mount Sorrel, &c.

Having made the necessary arrangements, with Mr. Oldknow on my right hand, and Mr. Attenborough on my left, and standing on the right side of the patient, an assistant forcibly brought down the thigh, which previously was drawn up close to the abdomen, when I carefully cut down to, and passed a strong ligature round the femoral artery, about two inches below Poupart's ligament. That being done, I plunged a long double-edged catlin directly through the upper part of the thigh, in a direction downwards as the patient lay on his back, the point entering close by the neck of the os femoris, and coming out near the tuberosity of the

ischium, and, cutting downwards about two-thirds of the whole length of the thigh, keeping the knife close to the bone, I brought it out in a somewhat slanting direction; thus forming, by one incision of the muscles on the inside of the thigh, a large fleshy flap, which was immediately grasped by Mr. C. Attenborough. Then, changing the knife for a scalpel, I laid open the joint to as great an extent as I could, and the assistants forcibly abducting the thigh, so as to thrust the head of the bone forwards, I succeeded in dividing the ligamentum rotundum without difficulty. The capsular ligament being, however, as yet, only divided on the inside, I resumed the long knife, intending to have passed it between the head of the bone and the acetabulum, and by holding the point directly downwards as when the first thrust was made, to have cut through the muscles and integuments from within outwards. But not being able to get the knife through the joint in that manner, I was obliged instantly to change my purpose, and carrying the handle of the knife downwards and outwards, cut through the integuments and muscles all round, from the acetabulum in front, directly above the trochanter major, down to the tuberosity of the ischium below. I had then only to divide the capsular ligament on the outside of the joint, together with the tendons inserted into the hollow behind the trochanter, and the limb was severed from the body. Mr. Attenborough immediately placed his other hand over the middle of

the wound, to prevent hemorrhage there, whilst Mr. Oldknow and myself began to secure the vessels with ligatures as quickly as possible, beginning with those on the outside of the joint, proceeding then to those about the acetabulum which had been compressed by Mr. Attenborough's left hand, and lastly to those of the large flap, which had been held in his right. But little blood was lost, and one-third of that came from the femoral vein. About a dozen ligatures were found necessary.

On examining the wound, there were found two large sinuses extending into the muscles covering the dorsum ilii, where matter had lodged; but they were not cut out nor was any thing done to them; nor was the cartilage, &c. about the acetabulum pared off. The vessels being secured by ligatures, and the wound simply cleansed, the large flap was brought over the wound, which it covered exceedingly well, and was secured, first by about half-a-dozen ligatures, and then by straps of adhesive plaster; after which, a double-headed roller was applied, and the poor fellow put to bed, as well as could have been expected.

A state of syncope occurred early in the operation; but one of the gentlemen who kindly took charge of him while we were engaged with the limb, gave him a little wine occasionally, as he seemed to require it, and he passed through it very fairly.

Pulse before the operation 110, immediately after, 120. Faint and cold.

Three o'clock. Pulse 126, countenance better, extremities cold, pulse feeble, with an intermission every twentieth or thirtieth stroke.

Half past five o'clock. Has had about an hour's sleep. Vomited at about five o'clock, owing, as he thought, to having taken too much wine and gruel. Pulse is now very hurried, 144, with occasional intermissions, full, but easily compressed. Perspiration has come on, with general warmth both of the body and extremities; is thirsty, and has drunk a little cold water. The stump easy; it feels warm through the bandages; particularly a spot three or four inches in diameter, where the femoral artery was tied, which is rather hot. (Bandages wetted afresh, bed clothes partially removed, window opened, &c.) He soon fell asleep and breathed pretty easily;—inspirations regular, about fifteen in the minute.

Eight o'clock. He is easy, more cheerful, quite warm, says he has been asleep several times, but was awoke by twitchings of the leg, as though it were on. Is perspiring. Pulse more uniform, 133. Complains of his belly, which is full, hot, and tense. Has had no stool for two or three days.

℞ Opii gr. iij.
Pulv. Rad. Ipecac. gr. iss.
M. et f. Bol. stat. sumend. cum Ol. Ricini 3vi.
Give a little cold water occasionally; keep the stump wet.

Ten o'clock. Much the same, easy, speaks cheerfully, body rather hot, foot warm, but the toes not very warm. Give a little gruel.

June 11th, one o'clock a. m. Has slept for the most part from ten o'clock until now, waking, however, occasionally from sharp twitches. He is now very sick; has thrown up several times; the castor oil swimming on the top.

Three o'clock a. m. Restless, fidgetty, talkative; countenance pale and nipt up; eyes glassy, with a morbid vivacity of expression. Skin warm, toes scarcely warm.

℞ Træ. Opii 3ss. Vini ℥ss.
Misce et f. Haust. statim sumend. in decocto avenæ.

Gave an aperient enema; a few hard lumps only discharged. Pulse is hurried, irregular, and indistinct.

Seven o'clock. Pulse feeble, about 130; some-

what more equal and steady. Tongue very dry. Another enema now given, but it brought away scarcely any fæces. Gave Træ. Opii 3i. more, in gruel; followed by Magnes. Sulph. 3iij. in a saline effervescing draught.

Ten o'clock a.m. About nine o'clock he vomited largely a yellowish fluid, and seemed relieved. He is now tolerably easy, both in the abdomen and stump. Yet has had no stool. Thirsty; tongue dry. Pulse about 126, with an intermission every thirtieth stroke. Gave Træ. Opii 3ss in gruel, and another enema, which, when evacuated, was accompanied by a few hard lumps.

Twelve o'clock. Seems better; more composed. Pulse 120, more distinct and regular. Heat of skin temperate and uniform; stump cool. Wetting the cloths has been discontinued since morning. Tongue not quite so dry. Directed the castor oil and glyster to be repeated. The oil was not rejected this time. The glyster was discharged without effect. Exhibe Magnes. Sulphat. 3i. cum Haust. Salin. Efferves. sæpe, donec alvus bene responderit.

Nine o'clock in the evening. The opening medicines, although frequently repeated, have not operated.

℞ Hydr. Submur. gr. v. in Pil. stat. sumend. cum Haust. sequent.
Ol. Ricini ℥ss.
Magnes. Sulph. ℥ss.
Infus. Sennæ ℥iss. M. et f. Haust.

Another glyster given. After two o'clock to-day he vomited a great deal, but has continued better since the last report. Pulse 118 only. Countenance improved. Is tolerably easy and quiet. Gave Opii gr. iij. with Ext. Colocynth. gr. x. as a night dose.

June 12, eleven o'clock, a.m. Pulse 118, soft and natural, but varying in force. Skin rather dry, but not very hot. Tongue clean, quite dry in the middle, but moist along the edges. Rather thirsty. He slept several hours during the night. Has had several stools since last evening. Abdomen not so full nor so tense,—but still it is both full and tender to the touch. He complains of no pain about the stump, only of the spasms having been troublesome. He is rather talkative this morning. The opiate pill (gr. ii.) given with a saline aperient draught. An enema brought away a large quantity of feculent matter. I removed the outer dressings, and cleansed away a little bloody discharge. Ordered the cloths to be kept wet again.

June 13th, ten o'clock a.m. He has had a good night. Slept as much as six hours. Passed a yellowish loose stool this morning. Pulse 110. Tongue dry, but clean. Skin temperate. Stump easy. The spasms have not been so frequent. He is cheerful and somewhat humourous to-day. Opii gr. ii. et Hydr. Submur. gr. v. have been given this morning, with an aperient draught containing one drop of Croton Oil. Saline medicines continued, with the addition of Ammon. Carbon. The cloths to be kept wet.

Eight o'clock in the evening. Has been purged eight or nine times to-day: stools of a natural appearance. He is now hotter generally: the stump too hotter, particularly about the ligature on the femoral artery. Pulse 118, fuller and stronger. Tongue dry, with a smooth skin over it. Let the effervescing medicine be continued without the ammonia. The opiate pill to be repeated*.

* The first stage is over. The shock on the system was truly dreadful, combined and aggravated as it was by the diseased state of the bowels. The preceding notes give but an imperfect sketch of the treatment:—nor is it easy to give any other. Remaining with him nearly the whole time, for several days, I endeavoured to meet the exigencies of the case as well as I could. It will be seen that my attention was very early imperiously called to the state of the bowels. They were quite blown up and exceedingly tender, so that while the primary object was to parry the shock, and support the system, by opium, cordials, &c. a scarcely less important one was to relieve them as soon as possible. I was obliged to watch every opportunity which the intervals between sleeping, vomiting, &c. afforded,

June 14th, eleven o'clock a.m. Pulse 100, regular and good, tongue clean, not quite so dry. Skin more temperate. He slept most of the last night, but was awoke frequently with twitching and chilliness about the stump. Has had a good stool this morning. Belly soft and easy. The dressings were entirely removed to-day, and the stump dressed. Mr. Palmer favoured me with his presence and advice. A complete suppuration had come on, and a good union had apparently taken place, for the most part. The large flap looked well and felt well; no tension; no extra heat. There is a puckering of the skin in the groin, where the integument is in superabundance, with a hollow

and promptly and assiduously to use such measures as seemed most urgently requisite at the moment. Opium was the remedy on which I placed greatest reliance: purgatives were combined with it, and given between, whenever an opportunity was presented. The sickness, however, so very much prevented their exhibition and counteracted their operation, that I found myself obliged to depend chiefly on glysters, and therefore gave them as frequently as I could, so as not to fatigue and harass the patient too much. The immediate effects of the shock, as will be seen by the notes, passed off before the bowels were much relieved. I thought it all over in the night after the operation. He rallied however considerably during the afternoon of the 11th. Evacuations, and those rather ample, were procured on the 12th, and relief was afforded. It was not, however, until the 13th, that the bowels were fairly emptied. I did not think of the croton oil until the morning of the 13th. I felt glad when it occurred to me, and the result fully answered to the good I anticipated from it. A full dose of opium was given night and morning, besides occasional doses when sickness or exhaustion seemed to require it.

place under it. Here some matter had collected, and a good deal was also discharged from the lower part of the wound, near the tuberosity of the ischium, where the ligatures were chiefly disposed. The discharge was fœtid. These two places (the groin, and the bottom of the wound) were not confined with plaster straps in dressing, that the matter might issue. He seemed rather exhausted by the dressing. The opiate and saline medicines continued as before.

June 15th, morning. Has had a pretty good night, though he was awoke sometimes from general muscular twitches, which, he said, always began about the stump. He seems rather low, though easy every where. He had a stool in the night, which looks healthy. Abdomen somewhat full to the feel, yet not painful, nor tender. Tongue clean, red, and dry, except immediately after taking liquids. Skin of about a proper heat; has been perspiring a little. Pulse varying from 96 to about 104, as he happens to be excited by moving, talking, &c. He is now very drowsy, soon falling asleep after being spoken to, and soon awoke again. I cleansed away a little matter with a sponge by opening the bandages a little, but allowed the rest to remain. Directed Magnes. Sulph. 3iij. to be given in gruel, and Ol. Ricini ℥ss. afterwards, if necessary; light nutritive food, and a little ale if he should like; also the following mixture, with the opiate pills night and morning as before. De-

coct. Cinchon. ℥xiss. Sp. Ammon. Aromat. ℥iij. Misce et sumat coch. iij. omni 4tâ horâ.

June 16th. The stump looks pretty well: there is nothing remarkable, except that both it and the bed-sore on the sacrum have rather a pale and flaccid appearance, and seem deficient in tone. With respect to the latter I may remark, that it has been unavoidably but little attended to of late. He has been obliged to lie upon it, and it is now spreading, in a direction up the back, from pressure. We have guarded it as well as we could, by using pads to take off pressure from the parts, making the bed hollow under it, &c. The foot is rather œdematous.

June 17th. He seems weak and dejected. Pulse 100, feeble. The large flap appears shrunk, and the whole of the parts look flaccid. Some good pus is discharged: but, from the outer portion of the wound, about where the trochanter major was situated, there flows some blackish matter, as though coagulated blood had been dissolved, and was coming away in the discharge. He has not had a stool to-day. He sleeps almost constantly. The impression on my mind is, that he is sinking. Cordials directed to be given, and the bark mixture to be continued.

June 18th. He seems a little better to-day: has had a tolerably good night; is more composed and

easy. Pulse 96, weak. Two ligatures came away to-day in dressing*.

June 19th. Pulse 92, soft and good, yet feeble and with an intermission occasionally. He says

* I may here observe that I found the two-headed roller, which had at first been used, exceedingly inconvenient. In using it, it was necessary, every time the parts were dressed, either to lift him upon a table, well guarded with soft substances, with his buttocks projecting, supported by an assistant, &c.; or to place something under him in bed, so as to raise the parts sufficiently to allow me to pass the roller round: in either of which cases it was a very irksome, painful, and fatiguing job for him. I contrived therefore a many-tailed bandage, which answered exceedingly well, and the dressing was managed afterwards with comparatively little trouble or disturbance to the patient. We had only gently to turn him on the right side, so as to expose the sacrum, loosen the ends of the bandage, cleanse and dress the wounds, raise the pelvis for a few seconds, while the bandage was drawn from under and a fresh one substituted, adjust the ends again, arrange the padding used to prevent pressure on the large bed-sore on the sacrum, and then gently to return him on his back again. The bandages were made of flannel, and applied in this manner:—Two of the ends were passed over and a little above the superior ridge of the ilium (so as to fix the upper part of the bandage), and secured by a pin at each corner. Then the remaining tails were brought over singly (pinned, if they did not fall in the direction I wished, making fixed points, after the manner of Mr. Young, in his admirable method of bandaging diseased breasts, &c.), and pinned at each corner. Thus, by making the different tails of the bandage to act by themselves, more or less support could be given to any particular part, as circumstance required; and the whole could be applied with great exactness and steadiness. Fine flannel, from its softness and elasticity, and not being so liable to get in ridges under the patient, seemed to me to be much superior to linen or calico for bandages in such cases.

he feels better. All the ligatures are come away except two, the one on the femoral artery, and the other a deep-seated one, hanging out at the lower part of the wound.

The opiate pills are continued regularly. Two grains of opium every morning, and three every night. The bark mixture also is continued, and nutritive food given.

June 21st. He seems more cheerful. Has had a good night. Pulse about 100 when quiet, rather more when disturbed. Appetite somewhat improved. Tongue clean: no thirst, skin cool, foot scarcely swollen at all. Has had several stools, but not so loose, and of good appearance.

The operation-wound doing pretty well. The discharge from it is a good healthy-looking pus. There is not so much discharge from the sinuses on the ilium, nor does the cavity there seem so large. There is a large cavity in the groin, and it is a very awkward place to manage. For the space of about three inches it has not united. When the large flap, at the time of the operation, was brought over the wound, there was found to be a superabundance of skin in that place; but it was not taken off, thinking that it would contract sufficiently. The skin, however, forming the abdominal edge of the operation wound in the groin, became tucked in around Poupart's ligament, consequently

the skin forming the flap edge of the wound could not unite to it; so that the wound along the course of Poupart's ligament remains open, one edge folded inwards, the other edge loose and puckered, with a cavity underneath, in which matter collects; and from the depth to which the probe passes, I fancy the cavity may extend to the acetabulum.

The bed-sore on the sacrum does not seem to spread: the discharge from it however is thin and ichorous, and some sloughs on it feel as if they were attached to the bone.

June 23d. He vomited his supper and probably the opiate pills. Has been purged too in the night, and appears a good deal reduced by it. Pulse 100, feeble. Foot rather cold.

The wounds look much as usual. The discharge is however most abundant, and he complains of irritability and twitchings of the muscles forming the large flap, as well as of subsultus tendinum generally. The former is so considerable as to be painful to him.

June 24th. The purging has ceased. He is more cheerful to-day. Pulse 100, skin healthy, appetite not amiss.

June 26th. Better, looks more cheerful. Pulse

96: easy: tongue clean and moist, skin temperate.

June 27th. Has had another fit of purging. He vomited his tea last evening, together with some dark-coloured matter, and has had five or six loose stools since. He is fidgetty and unsettled. Pulse 106, skin rather hotter, tongue drier, bowels rumbling.

The wound looks much the same. The sore on the sacrum is improving, granulations are rising up. The bare and dead piece of bone appears to have been composed of a portion both of the sacrum and os coccygis. Lately it has become black, and divided into two parts. To-day there is quite a chasm in the middle, and the two portions, the one being the lower edge of the sacrum, and the other the upper edge of the os coccygis, appearing to have been pushed up from below, form two black bony ridges, with granulations shooting up around.

June 29th.—He vomited his supper as well as a dose of bark-powder in wine; and a large quantity of yellow matter this morning; had a loose stool last night, and another very copious, watry, green-coloured, and offensive this morning. Do not these circumstances account in some measure for the state in which I found him yesterday?

June 30th. This morning he was asleep when I visited him, looking quite tranquil, with a steady even pulse, 96: when awake, however, it rose to 100. The tongue is clean, but rather dry; the skin soft and temperate. I have no particular remark to make about the wounds.

July 1st.—Pulse steady, 108; tongue clean and moist; appetite not amiss. He has had two stools yesterday and one to-day, although no opening medicine had been given with the opium, of which he takes five grains daily. The discharge now uniformly collects on the dorsum ilii, the opening not being properly depending. If he had not been so exceedingly afraid of pain, I should have opened that sinus before now. The whole of these parts are very sore, yet without heat, or redness, or tension. Introducing a probe gives very great pain.

July 5th.—Better: pulse 108; appetite good: has had one copious natural stool. The wounds look pretty well. Wishing, however, very much that the matter of the sinus on the ilium might be evacuated regularly by a depending opening, yet unwilling to make a large wound, I introduced a director into the hole at which the matter had hitherto issued, situated in the operation-wound, near the superior anterior spine of the ilium, quite at the top of the sinus, as the patient lies on his right side, and pushing it against the skin where the matter collected, I

punctured down to it with a lancet, then, withdrawing the director, I inserted it at the small wound I had just made, and opened the sinus downwards, about an inch and a half with a bistoury. Although I should not have expected any very great pain from it, for the operation was done in a short time, and was but a trivial thing altogether; yet he complained very much, and seemed considerably affected by it. He looked pallid, grew cold, and awhile afterwards there was a flush on the cheeks, and an increased fulness and impetus of the pulse. I mention these matters more to shew the state of my patient at this time, than for any thing else.

The treatment has been lately Cinchonæ Pulv. ℈ i. about every four hours when free from fever, or an effervescing draught if feverish, and the opium night and morning as before.

I find that he yesterday walked, or rather hopped, across the room twice, supported by a person on each side, and that he performed pretty well on the whole.

July 9th.—He is restless to-day; complains of pain about the upper part of the wound, the part mentioned July 5th. Pulse from 102 to 108, rather more forcible; skin rather too hot.

All the outer portion of the operation-wound, from [illegible] ilium to the tuberosity

of the ischium, is more or less cicatrizing, except two places, one where the matter from the sinus on the ilium formerly issued, and the other where the ligature still remains, near the bottom. That part of the operation-wound along Poupart's ligament is closing up a little: there remains, however, a very large fissure there, the skin on the abdominal side being tucked in. It is very deep, extending apparently to the acetabulum: yet there has been of late no pain in that part; it does not discharge much, and is not very tender. I fancy I can feel a deep-seated fluctuation under the lower part of the flap, about the acetabulum; yet the part is neither tense nor painful. The parts adjoining the sinus on the dorsum ilii are decidedly the most painful and tender of the whole: he always complains when they are touched. The bed-sore on the sacrum is now well filled with granulations: they look, however, somewhat loose, and there is no cicatrization at present along its edges. Granulations have sprung up all around and between the two pieces of dead bone; they have buried the upper edge of the os coccygis; and the other black piece, the lower edge of the sacrum, feels loose, as though it were only sticking among the granulations, and had been raised up by them from the bone below.

July 13th. Cheerful, bowels regular. Pulse 108, appetite good. The wounds look well. The ligature was taken out. The back sore seems disposed to cicatrize a little.

There has been for some time back an indistinct sort of fluctuation to be felt about the acetabulum, under the flap; yet it does not feel soft, as though there was common pus underneath; but it has a firmer feel, as though there was a collection of semi-gelatinous matter.

July 16th. He looks very feeble to-day. Pulse 110. He was taken with vomiting and purging last night, had four or five loose stools, copious, some of them of a light colour. There is a great and alarming change in the parts altogether. Matter has formed to a considerable extent, below the superior spine of the ilium. The large flap too is quite flaccid, and shrunk, and wasted, and the whole of the parts concerned in the operation, seem as it were to be dissolving away. A part of the wound, which was previously healed, has given way. The sinus on the ilium seems to have been extended. Indeed all the parts, as far as the sacrum, about the tuberosity of the ischium and anus feel loose and half dissolved, yet without inflammation.

July 17th. He looks dejected, says he feels very low: has but little appetite. Has had five or six stools to-day, of a yellowish colour and thin. He did not sleep well in the night, was sick, and vomited this morning. Pulse 104. The appearance of the wounds is somewhat more favourable to-day, and the parts seem to have acquired more tone. I was obliged to make a small opening to evacuate matter which had collected between the tuberosity

of the ischium and the lower part of the sacrum, as well as to puncture the lower edge of the upper abscess, mentioned yesterday. The sore on the sacrum is healing a little, and the piece of bone is apparently diminishing. He appeared very low after this painful dressing, the hands and foot becoming cold.

A cretaceous mixture, with astringents, has been given the last two days, besides the usual quantity of opium night and morning.

July 18th. He looks better. Pulse steady, about 100. Tongue clean and moist. Has had five stools since the last visit. The wounds look better. The suppuration at the upper abscess does not extend. A regular circumscribed cavity is now formed, and the rest of the parts are firmer and more healthy. He wished to sit up a little. We placed him in a chair. Pulse then 108.

July 21st. Pulse 104. Tongue clean and moist, appetite good. One stool only yesterday, and one to-day. It is remarkable that the opium had not apparently any astringent effect on him at all. There is a great deal of discharge from the sinus on the ilium, and rather more from the fissure in the groin. The rest of the wounds look middling well. The sore on the back looks clean, but the granulations are loose, and fungous, not firm.

July 28th. From the last report to the present nothing material has occurred. He has been gaining strength, I think, gradually. He sometimes gets up with assistance, and moves about a little, which he can do now without inconvenience. On the 24th he went to pay a visit to his wife, who lives a few doors off.

The wounds are now doing well. The abscess mentioned on the 16th is nearly filled up again, the chasm in the groin has contracted somewhat, and the small opening made near the ischium (the 17th) is almost closed up. It is evident however that there has been for some time matter under the large flap, near the acetabulum, which by pressure may be forced out at the top. Probably too some of the matter discharged at the orifice leading to the sinus on the ilium, may originate there.

July 30th. He was removed to-day from Belton to Kegworth, a distance of six miles. He bore the journey pretty well, but feeling fatigued, requested that the dressing might be postponed until the morrow.

August 1st. He is better, eats well, sleeps well, and is cheerful. Pulse regular, about 90.

August 3d. A small opening was made yesterday towards the bottom of the flap. (See July 28th.)

He complains that it pained him the whole of the day afterwards. He is fretful and irritable. Pulse 108. Bowels rather too loose. There is more discharge from all the places, and it is of a thinner kind than usual.

August 6th. The parts look pretty well. He has been able for some time back to sit up for a short time. He can now get about the house a little on crutches. He can manage tolerably well when lifted up, but he cannot raise himself from the sitting posture, so as to commence walking with the crutches, without assistance. He is very loth to exert himself at all, and we have therefore procured for him a small carriage on springs, in which he is drawn about out of doors several times a-day for exercise.

From the above report I made no regular notes of this case. The patient remained at Kegworth until August 28th, when he had become so much improved as to render his stay no longer necessary. He had a person with him to take care of and wait on him. He was drawn about in the carriage, and I directed him to be as much in the open air as he could pleasantly. He improved gradually in all respects. He gained flesh rapidly. The sore on the sacrum healed entirely. The orifice made to allow the free discharge of matter from under

the flap soon closed up, and there was but very little after the matter originally collected there had been evacuated. The parts acquired firmness and tone. The large flap, keeping pace with the rest of the muscular system, became plumper as he gained flesh in other parts. A weak solution of the sulphate of zinc was injected into the orifices through which the matter was discharged from the dorsum ilii; and to my surprise a little came out at the fissure in the groin, on the other side of the operation-wound, shewing that the union of the large flap with the parts underneath, had not even yet been quite complete in all points. He did not gain strength apparently so fast as he gained flesh.

When he left Kegworth, August 28th, he might be said to be in good health. He ate well, slept well, had no pain, bowels regular; scarcely any tenderness remained about the parts concerned in the operation. The sinuses also on the ilium seemed to be closing up; there was scarcely any discharge. The large flap forms an excellent cushion; it feels so sound and well, that he says he could bear, he thinks, a good hard kick on it.

September 10th.— (Three months after the operation.) He is now perfectly well; in very good general health, and is getting quite fat. His friends think that he would weigh heavier now than he would have done at any time for the last

several years back, when he had his leg on. He has been in the stocking-frame; finds that he can work a little, and thinks that he shall soon be able to work tolerably well.

Thus has terminated this very interesting surgical case: and my efforts and anxieties, which have been neither few nor small, have been crowned with the most complete success.

January 1825.—He remains perfectly well. I have been obliged however to bleed him twice since the last report, as well as to entice him to take medicine occasionally, to purge and to lessen his appetite. He now works regularly in the stocking-frame, and is in as good health as need be.

January 1826.—He remains well.

I beg leave to subjoin a few practical remarks:

1. This case is a good instance in proof of the correctness and importance of the position so ably laid down and maintained by Mr. Guthrie in his excellent work on Gun-shot Wounds and on Amputation: namely, that this is a practicable operation, recovery from which is not impossible; that the chance of success is fully sufficient to warrant a surgeon in recommending it, in all those cases in which the recovery of the patient is despaired of without it; and, moreover, to render it his duty,

where no other chance appears, to offer to his patient this chance; and not, as has often been the case, by shrinking from it, suffer him to die, without any effort being made to save him.

2. I am disposed indeed to go a step or two farther than this: for, as far as a conclusion can fairly be drawn from a single case, I think we are justified by this in concluding, that amputation at the hip-joint is not so very much more formidable, either with respect to its performance, or the prospect of recovery after it, than the ordinary operation of amputating the thigh very high up, although a vast difference is usually made between the two cases. Amputation at the hip-joint, so far as I am aware, is not much more difficult to be performed than the other; it takes up no more time, the loss of blood is not greater, neither is it attended by any greater loss of substance of any consequence. There are, to be sure, a few inches more of bone removed in one case than in the other; but the saving of skin and muscle is much the same in both. What then constitutes the difference?—a difference so vast and terrible, that the one operation is constantly performed without hesitation, while the other is shrunk back from, as horrible, desperate, and almost hopeless.

3. The great dread seems to be of mischief from opening the joint in this operation; yet no such mischief occurred in this case, nor was the

acetabulum, at any time subsequently to the operation, the seat of any particular pain, tenderness, or irritation, not so much so, I think, as the end of the bone commonly is in cases of the ordinary amputation of the thigh.

4. No care was taken in this instance to remove the cartilage and ligaments, not even the ragged portions, about the acetabulum. Yet there was no sloughing of these parts, no extensive suppurations in consequence, nor any of the evil effects of such irritation on the system. The capsular ligament was simply divided in the course of the operation, to lay open the joint, and remove the head of the bone; and in that state were the parts left, and the flap brought over them, under the idea that the cartilage, ligament, &c. would retain their vitality, and become so organized as to granulate, and eventually unite to the contiguous parts.

5. It was not thought necessary to make an external opening communicating with the acetabulum, as recommended by Mr. Guthrie, for the discharge of matter which might collect there. And I would ask whether scraping off the cartilage, paring away ligament, &c., together with the making of such an opening as above mentioned, would not have tended to produce the very evils they are intended to guard against?

6. From the ulcerated and diseased state of the integuments and muscles on the outside of the thigh, we were obliged to depend entirely on those of the inside for a covering. But although in this case, there was no choice whether to finish the operation with one or two flaps, so excellent a cushion and covering was procured by the one formed from the soft parts on the inside of the thigh, and so well did it fit and unite, yet I doubt whether there would have been any advantage in two flaps, had the case been favourable for that mode of operating.

7. I would observe, however, that when only one flap is to be made use of, it should be a very large one, for it takes a larger piece to cover the wound well, than would in general be expected; of which a person might soon convince himself by performing the operation in that manner on a dead subject, or on an animal.

8. Although securing the femoral artery by ligature previously to the operation, is of itself, as it were, an additional operation, and may be considered by some as unnecessary, I do not repent having done it. By the knife being passed down for several inches close to the bone, in order to make the large flap, the femoral artery was not divided until after the giving off the profunda: if therefore the former vessel had not been pre-

viously secured, there would probably have been more ligatures required, and there might consequently have been a greater hemorrhage; a circumstance which, independently of the embarrassment it often occasions to the operator, it behoved us, in this case, particularly to guard against, on account of the exceedingly reduced state of the patient.

9. It will be seen by the preceding notes that opium was used very largely in this case; and as I think that the recovery of the patient may, in no inconsiderable degree, be attributed to its beneficial effects, I may be allowed to say a few words on the principles by which I was guided in its exhibition. I consider it a very important medicine in many surgical cases; it was my sheet-anchor, as it were, in this; and I feel particularly obliged to my friend Mr. Oldknow for communicating to me his high opinion of its utility, from the good effects he had often witnessed from a similar use of it, by which I was induced to give it so largely, and with such entire reliance on its powers.

Our aim was, not only at the first, by liberal doses of laudanum, to sustain the patient under, and, as it were, to ward off the shock immediately resulting from the operation, but also afterwards, by continued efficient doses of opium, to raise the tone of the system during the stage of depression until a restorative process should be established.

It was to excite and keep up an artificial nervous energy in the system, and thus, by diminishing the irritability of the general habit, prevent, in some measure, the morbific effects usually resulting from local irritation.

It is remarkable that although five grains of opium were given daily for a long time, it did not seem at all to confine the bowels, or disturb the head.

10. I beg leave to hint at another particular about surgical operations, which has been strongly impressed on my mind by this case; viz. the paramount importance of strict and almost uninterrupted attention, on the part of the surgeon, to the after-treatment. This is a matter which is not generally considered of so much importance as I think it ought to be. It is not enough that an operation be well and properly performed in the first instance; nor is it enough that proper directions be given to the nurse, &c. Surely the whole of the treatment, including not only that of the part itself, but also the diet, (the withholding as well as the giving of food,) the temperature of the patient, the medical treatment, all the ordinary sources of excitement, in short every thing by which the health of the patient is affected, should be under the superintendence and management of some competent person, who, taking on himself, in some measure, the duties of sur-

geon, physician, and nurse, should vary them as occasion might require. I hesitate not to say that the recovery of the patient, after severe surgical operations, depends fully as much, and in many cases more, on the after-treatment—on the judicious regulation of these oftentimes considered trivial matters,—than on the skill and science displayed in the operation. It is of the utmost importance to anticipate, ward off, and remove as speedily as possible, dangers as they arise. And yet how little is said about it, comparatively, either in books or lectures on surgery. And how little attention is paid generally to this part of the business, by the pupils at our hospitals. Will they not flock in crowds to witness a good operation, while not one in fifty of them will trouble themselves at all about the after-treatment of the patient?

NOTE

TO

DR. MERRIMAN'S PAPER

ON

PARTURITION*.

In the "Observer" Sunday Newspaper for September 9, 1827, a trial for seduction, *Anderton* v. *Whittaker*, is reported, and the following evidence is stated to have been given by the girl:—"It was on the 8th of January that I had the intimacy with the Defendant, *but never had any before or since*." "The child was born on the 18th of October." On being cross-examined, she added, "The 8th of January was a Sunday. I don't know where the Defendant had been spending the day, but he came to our house in the evening, and staid till ten or eleven at night. My misfortune happened about eight o'clock." Other confirmatory evidence is mentioned.

If this evidence on oath can be relied on, it proves that the child was not born till the 284th day from the time of conception.

EXPLANATION OF THE PLATES.

PLATE VI. A.

Represents drawings for Mr. Chevalier's paper in Part I. page 63. The explanation is at page 276.

PLATE VI. B.

Represents the appearances found on dissection in the case of inflamed iliac and femoral veins described by Dr. Forbes.

a. Vena cava inferior.
b. Right common iliac vein.
c. Left ditto.
d. Part of the left internal iliac vein.
e. Left external iliac vein.
f. f. Portion of the femoral vein.
g. One of its large branches.
h. h. h. Coagulated blood and fibrin occupying the interior of the femoral vein, external iliac, and a part of the common iliac veins, and also extending into the commencement of the left internal vein.

A new membrane was formed within these vessels, slightly adhering to their internal coat.

PLATE VII.

Represents a preparation in the Museum of St. Bartholomew's Hospital of the uterus and vagina, taken from the subject of the first case of lacerated uterus related by Mr. Birch.

A. The Vagina laid open from the front.
B. The uterus also laid open from the front.
C. C. The posterior lip of the os uteri.
D. The laceration implicating the posterior parietes of the vagina and of the cervix uteri, healed to a small extent at each extremity.

PLATE VIII.

Represents two drawings illustrative of Dr. A. T. Thomson's case of Hydrophobia.

Fig. 1.

A. The spinal cord.
B. B. B. The theca vertebralis slit up and spread out, loaded with effused blood.
a. a. a. a. a. Coagula in the cellular covering of the theca vertebralis.

Fig. 2.

A. The spinal [illegible] with its vessels greatly distended

B. The theca extended, shewing the nerves with the accompanying vessels turgid with blood.

a. Turgid vessels of the arachnoid of the spinal cord.

PLATE IX.

Drawings from preparations referred to in Mr. Lawrence's paper on dislocations of the vertebræ.

Fig. 1.

A back view of the third, fourth, fifth, and sixth cervical vertebræ, which are marked by corresponding figures.

7. 8. The superior articular processes of the fifth vertebra exposed, in consequence of the fourth having been completely dislocated forwards.

9. Apex of the spinous process of the fourth lying in contact with the basis of the spinous process of the fifth vertebra.

Fig. 2.

A section of the same bones, shewing the displacement forwards of the body of the fourth vertebra, and the diminution which the accident has produced in the diameter of the vertebral canal.

Fig. 3.

Front view of the bone described at p. 402.

a. Basilar portion of the occipital bone.
b. Anterior extremity of the basilar process.
c. d. The jugular foramina.
e. f. Anterior condyloid foramina.
g. Atlas.
h. The middle tubercle of its anterior arch.
i. The left transverse process.
k. The right transverse process.

From *k* to *g* the atlas is anchylosed to the occiput and to the second vertebra.

l. The axis.
m. The right transverse process.
n. The third cervical vertebra.
o. p. Its transverse processes.

FIG. 4.

The same parts viewed from the cavity of the cranium.

a. Basilar process of the occipital
b. Posterior arch of the atl
right in an abrupt p
bone had been ab
c. The axis. It is
put, immed
dyloid f
d. Dentif
int

PLATE X.

Represents a drawing taken from the first case of fungous eruption detailed by Mr. Wallace in his paper.

PLATE XI.

Drawings from preparations in the possession of Mr. Langstaff, illustrative of the process of union after fracture of the cervix femoris.

Fig. 1.

A section of a fractured neck of the thigh-bone within the capsular ligament, shewing great shortening by absorption, and a ligamentous union between this portion of the bone and the head of the femur.

Fig. 2. and 3.

Are … a thigh-bone which had been …he capsular ligament, and had …bone and a cartilaginous medium; …e thigh-bone having been nearly ab-

… XII. and XIII. are from drawings to il-… Stanley's paper on Injury to the Hip

PLATE XII.

Represents a fracture of the trochanter major of recent occurrence.

a. Portion of the trochanter separated from the shaft of the femur, and drawn backwards by the muscles towards
b. The tuberosity of the ischium.
c. Ischiatic nerve.
d. Shaft of the femur.

PLATE XIII.

Represents an instance in which a portion of the trochanter major separated by fracture, although at some distance from the shaft of the bone, has reunited to it.

a. Separated portion of the trochanter drawn backwards.
b. Tuberosity of the ischium.
c. Posterior part of the head of the femur.
d. Tendon of the rectus muscle.

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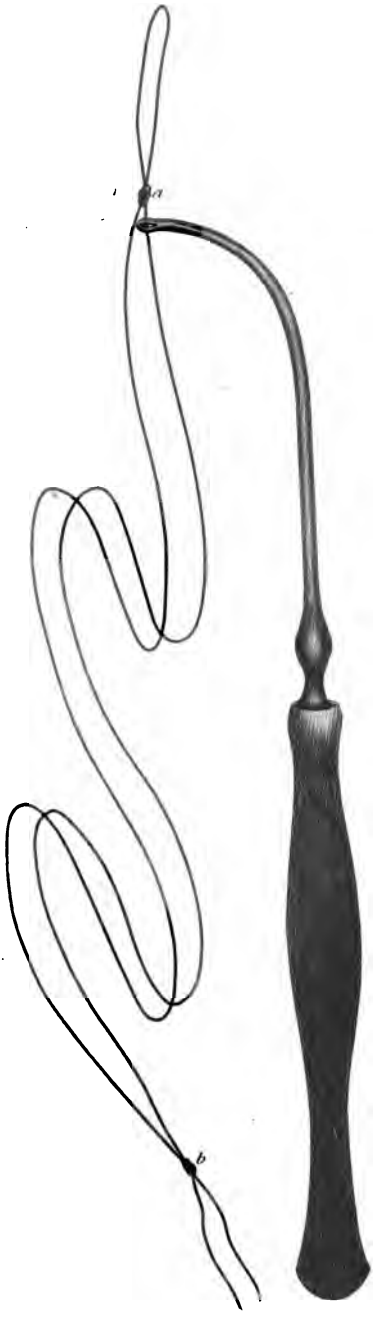

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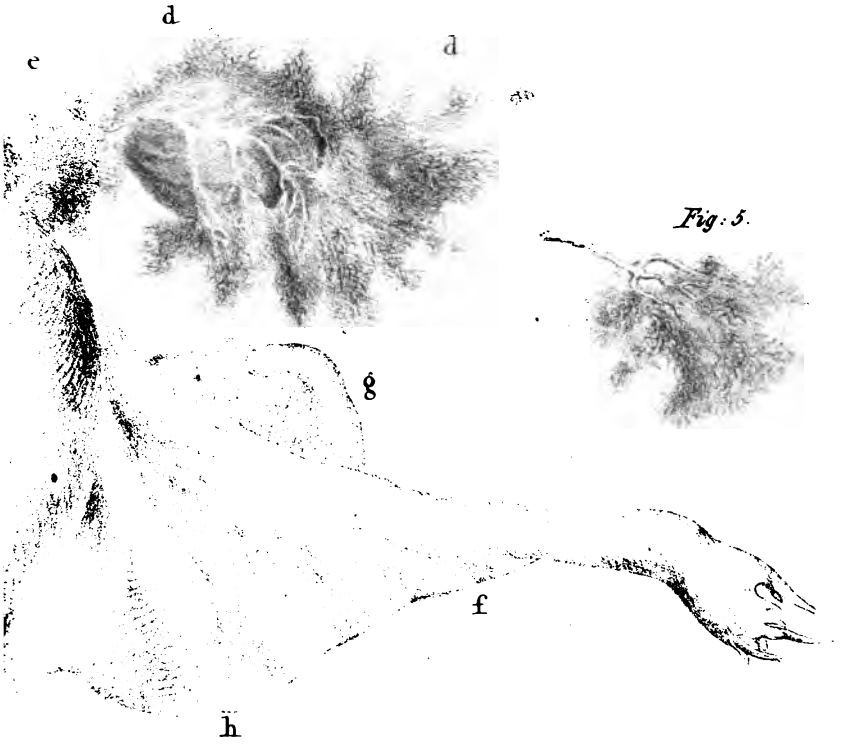

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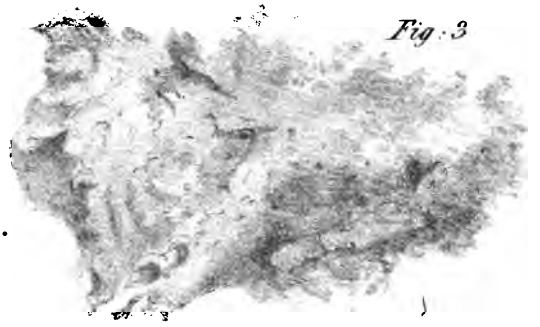

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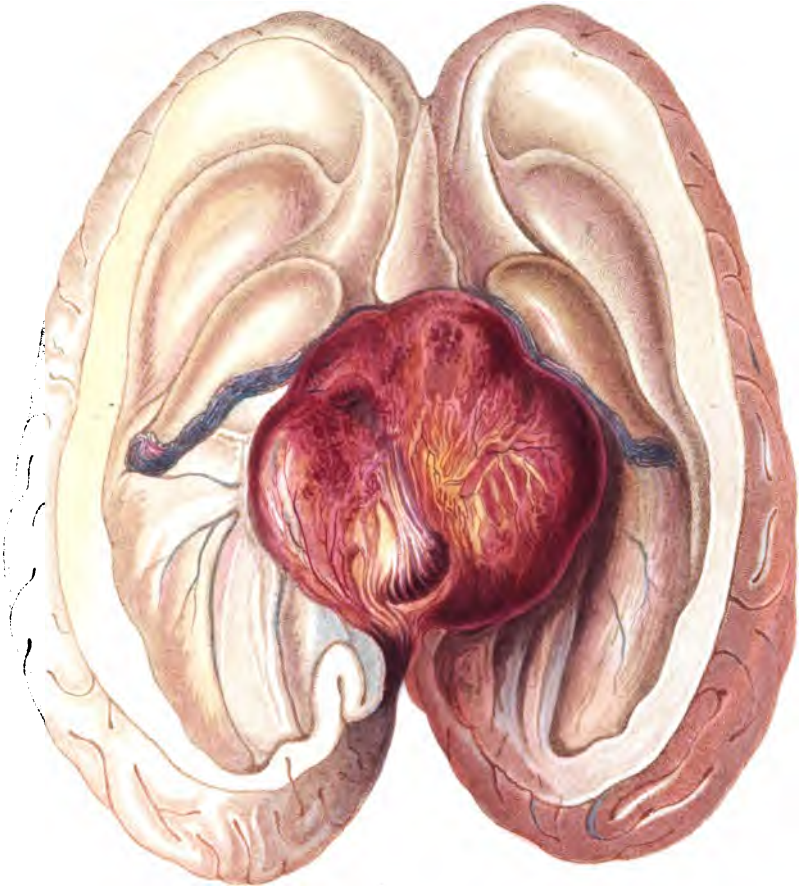

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Eng.d by J.Stewart

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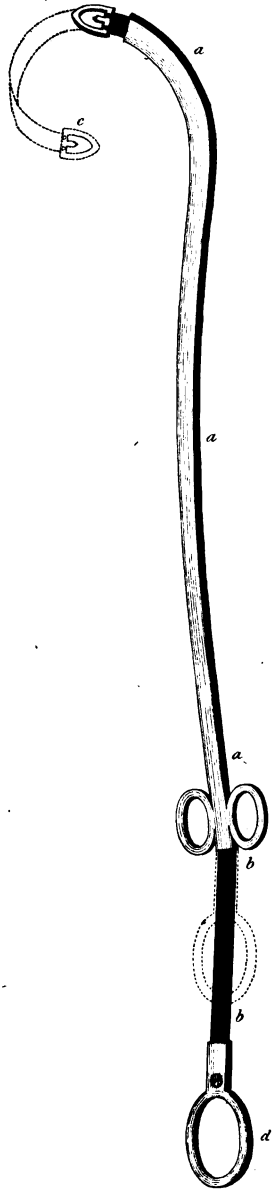
Fig. 1.



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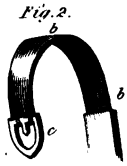

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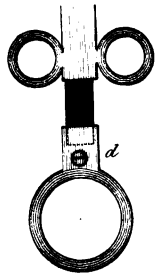
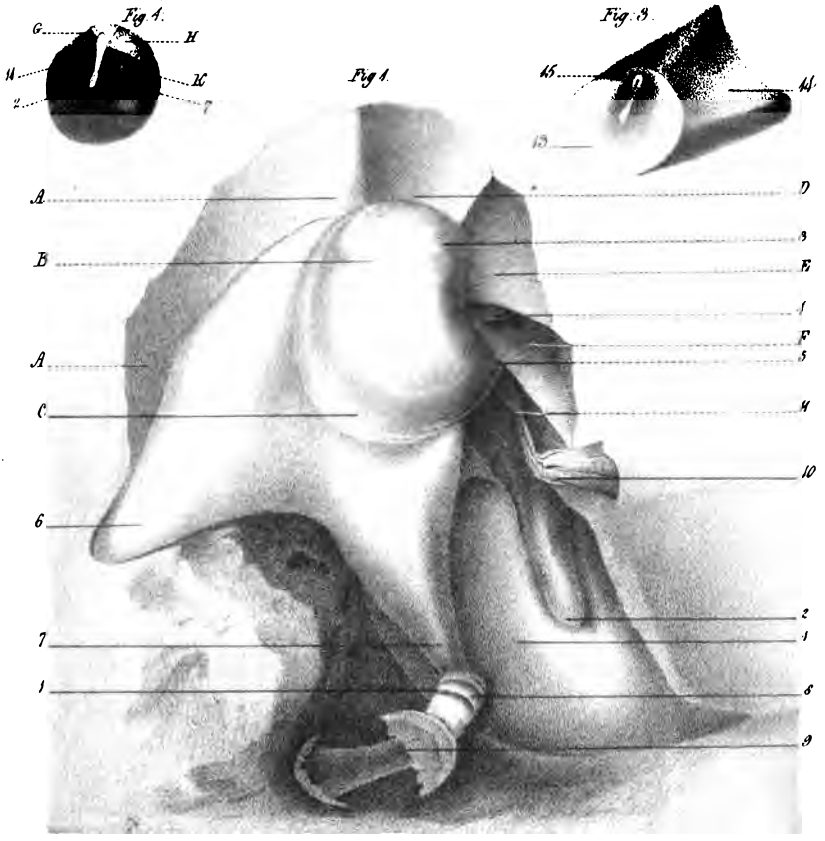
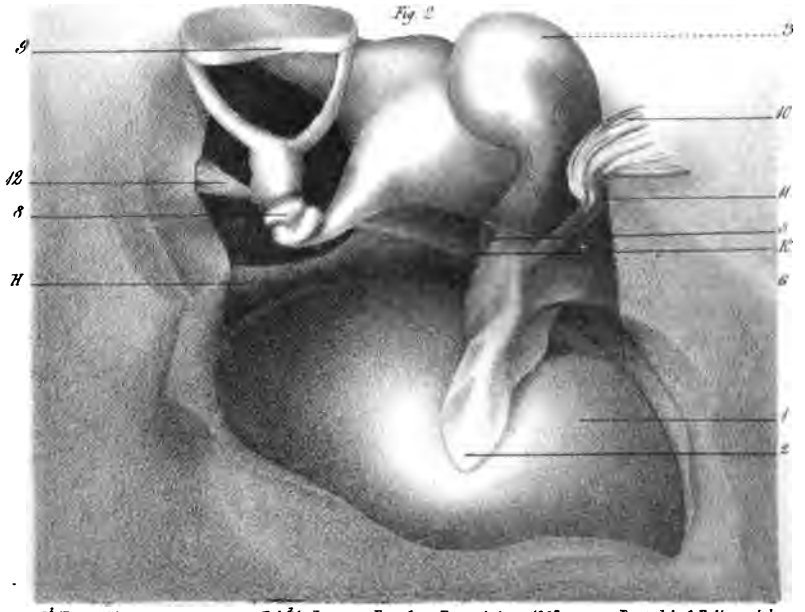


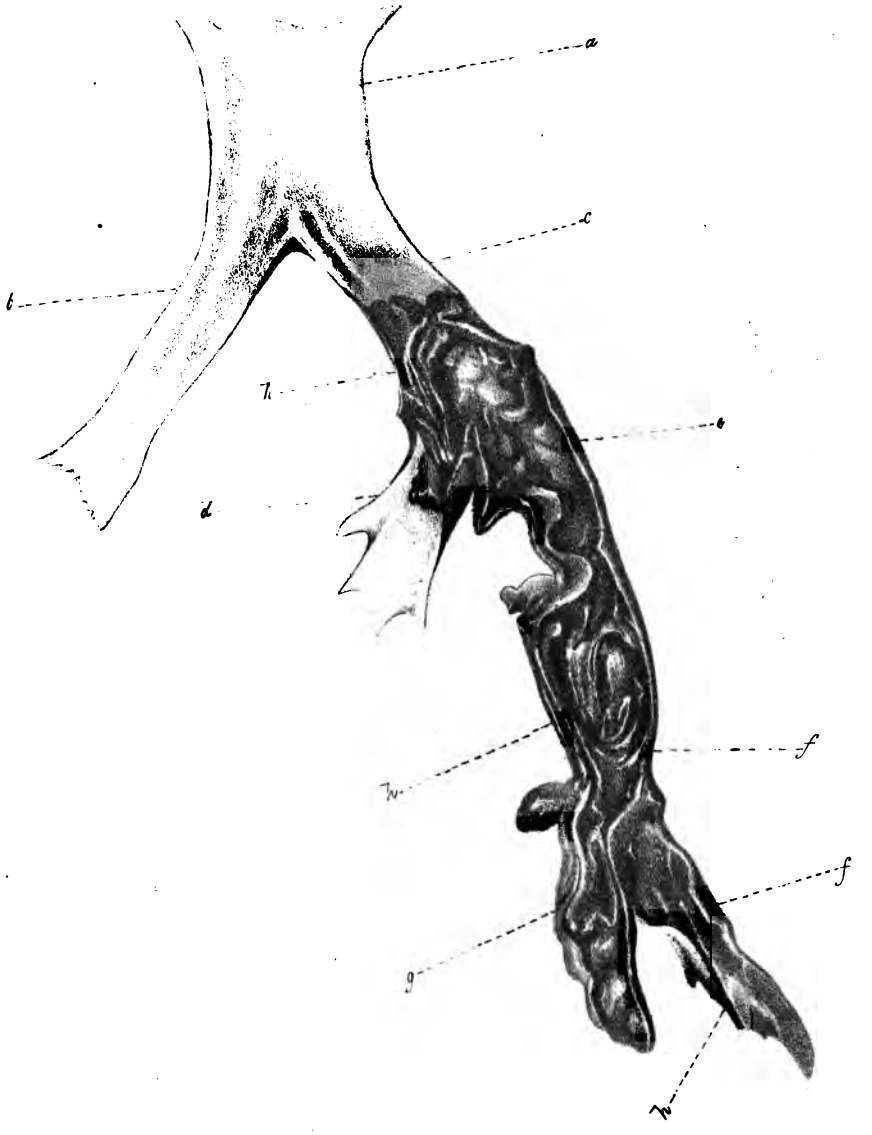
London, Pub.d by Longman & Co. Aug.t 1826.





J.h Perry, lithog. Pub.d by Longman, Rees, Orme, Brown & Green. 1827. Printed by C. Hullmandel.

Plate 6 Vol XIII. B
(bis)



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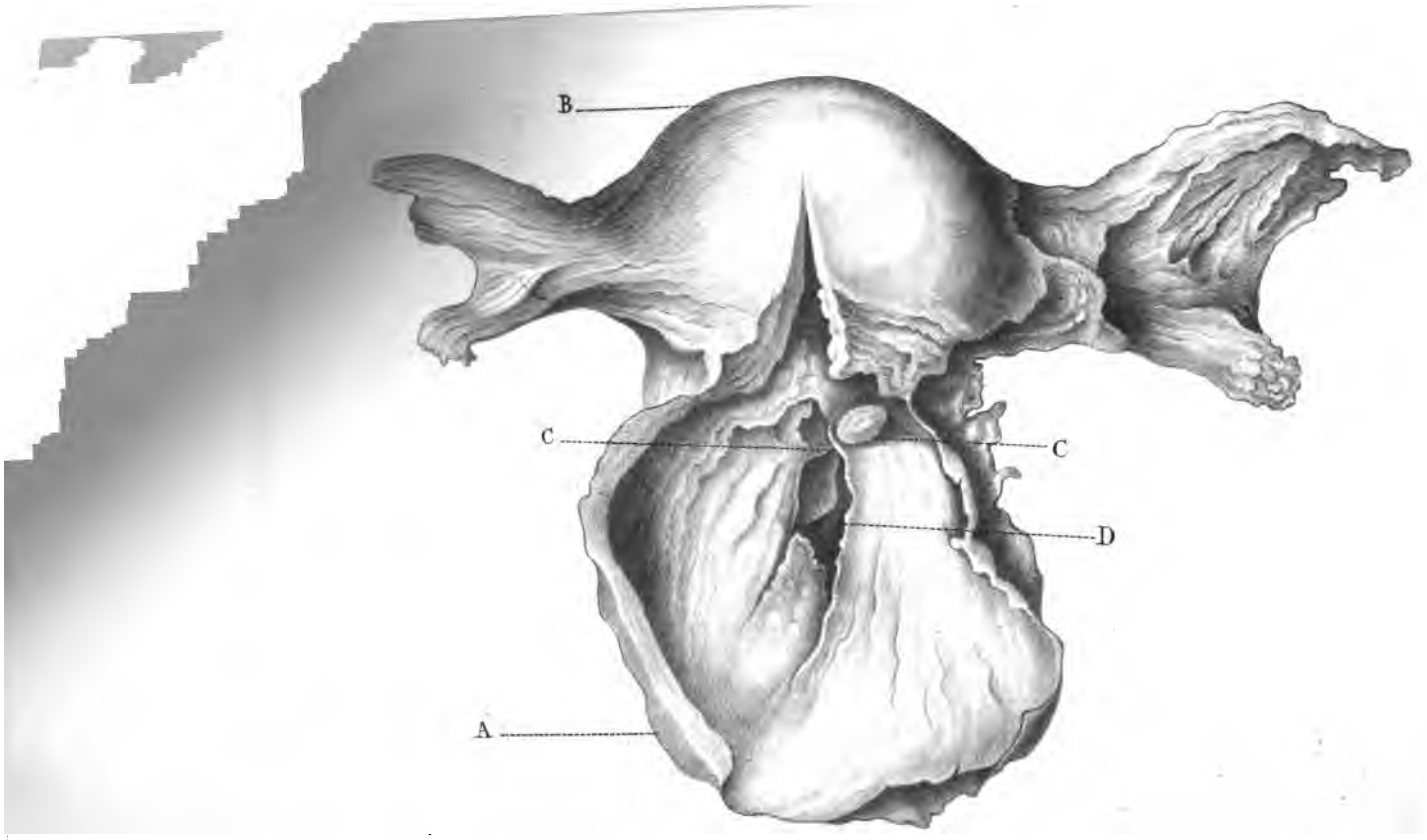

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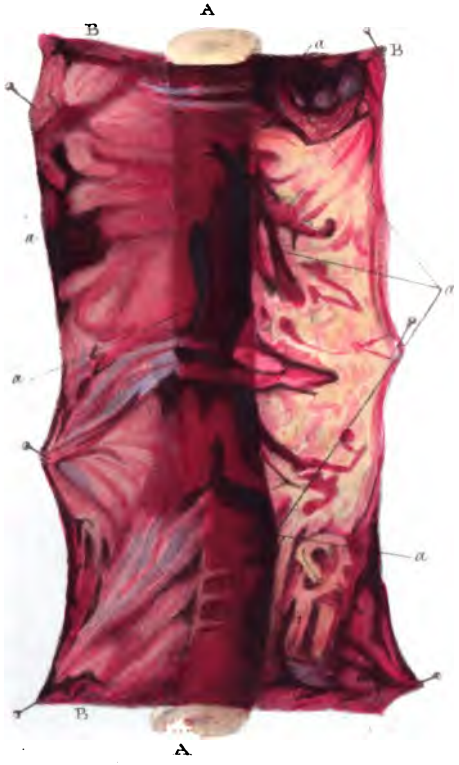

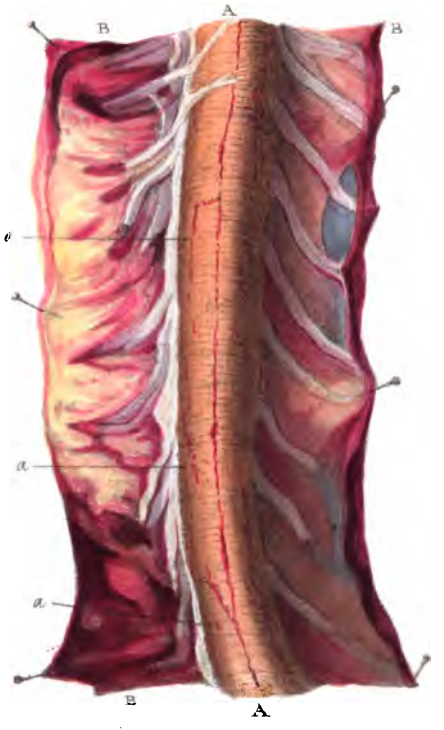

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Fig. 4.

Fig. 3.

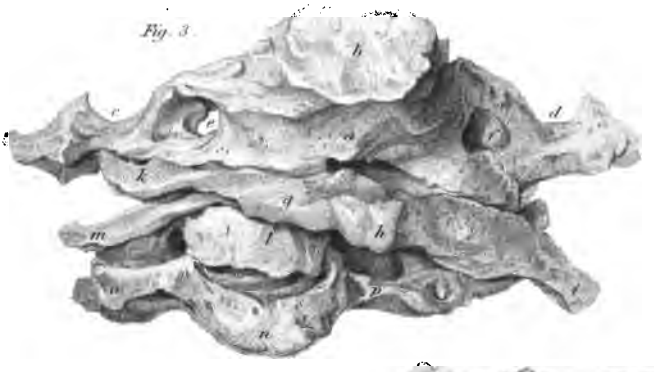

Fig. 2.

Fig. 1.

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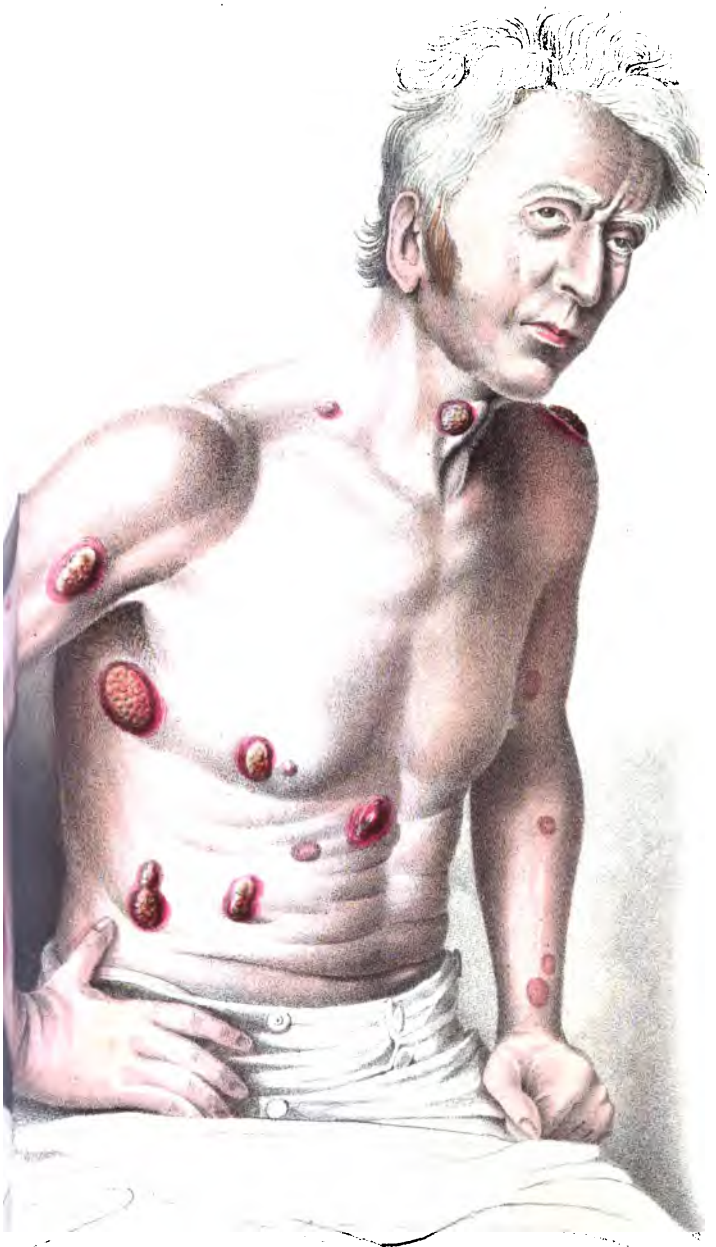

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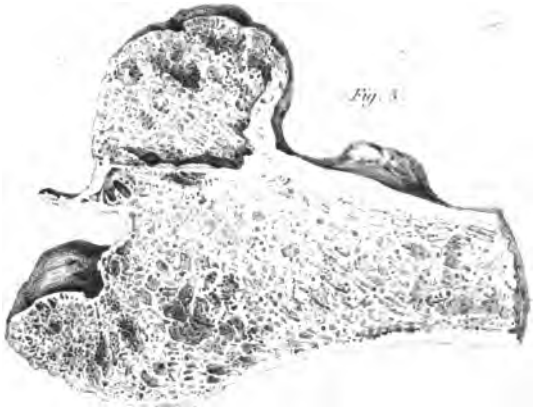
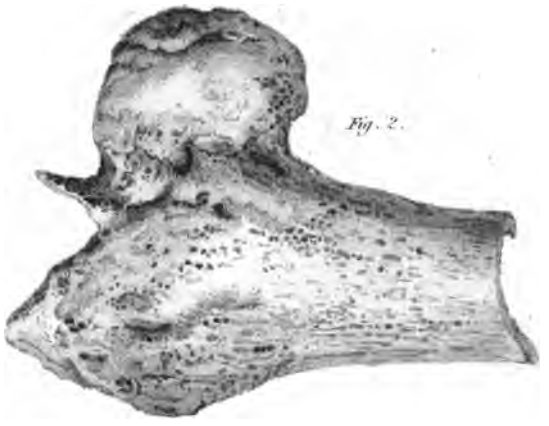


Fig. 3.



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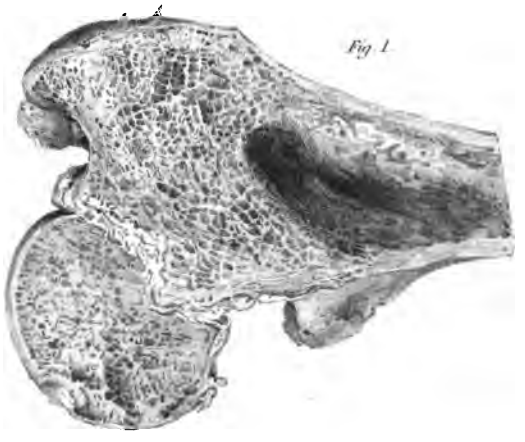

Fig. 1.

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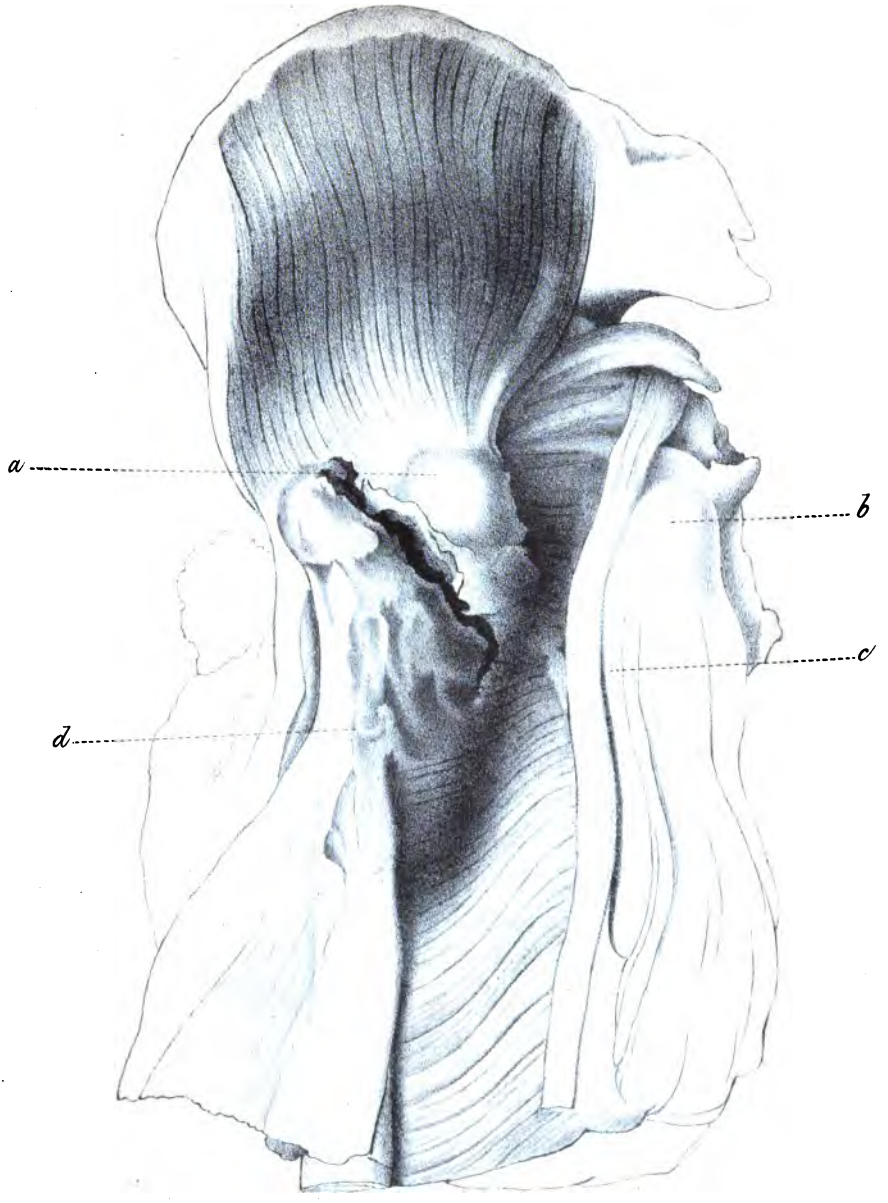

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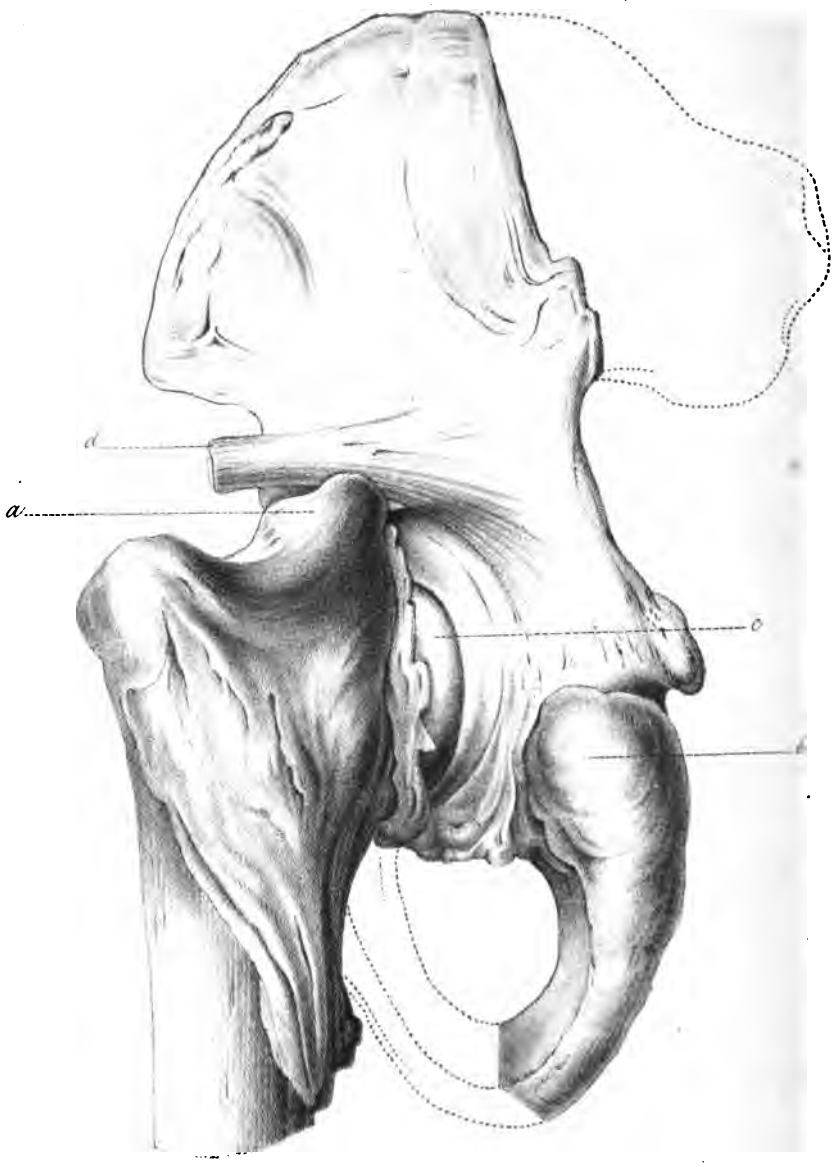

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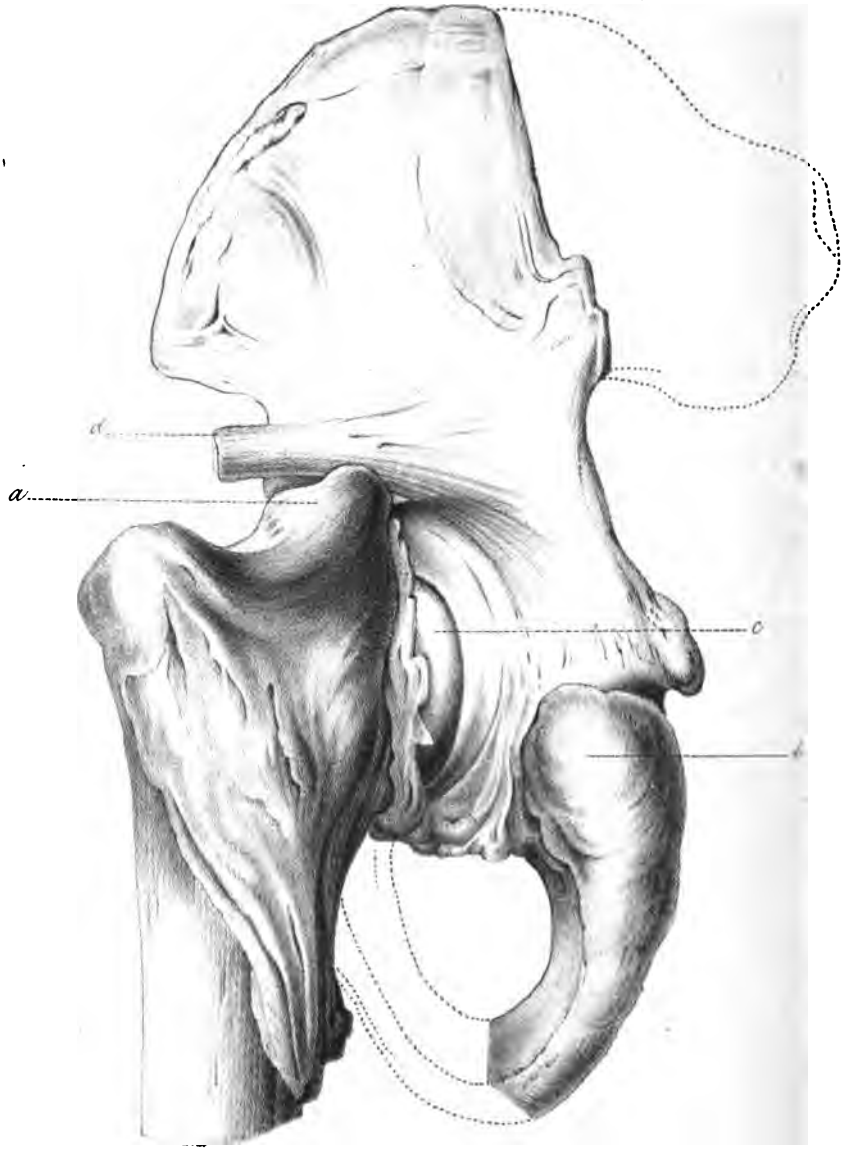

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